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Vol. 3

Nº 9

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Archive

The Subscription Magazine for Archimedes Users



New uses for !TinyDirs

Graphics Techniques for RISC-OS

Archimedes Connectivity

Using !Edit and !Draw / More on Studio24 Plus

More on LC10 Colour Dumps

Reviews: CraftShop 1 & 2, !FontFX, Olympics,
Knowledge Organiser, Holed Out Designer,
R140, Z88 Dabhand Guide.

DTP Special ?

This issue seems to have turned into a DTP special – not on purpose. There is Ian Lynch's DTP column, of course, in which he has mentioned all four DTP packages which are currently (not quite!) available. Gerrald Fitton has taken up the DTP theme in his PipeLine column telling us how to use PipeDream3 for the purpose. Then there is Dave Smith doing the same with !Edit and !Draw. Finally, for a bit of variety in presentation, Simon Burrows tells us about !FontFX.

PD explosion

PD software for the Archimedes is beginning to take off. Several new suppliers have appeared and our own range has reached 27 Shareware and 7 Careware discs. When you are buying PD software though it is worth looking at what you get for your money. You may find that some suppliers are spreading programs over a number of discs which, to me, seems to go against the whole spirit of PD. It would be hypocritical of me to pretend that we don't make any profit on selling PD software, but I can't see that any other motive than profit can prompt suppliers to split programs up over a number of discs.

Must dash now! I'm just off with the family for a few days break.

Best wishes,



Government Health Warning – Reading this may seriously affect your spiritual health.

It's Ali's turn this month...

How far would you be prepared to go for something you believed in? Would you talk to your friends about it? write to a newspaper or your MP about it? set up a campaign about it? defend it in court? die for it?

Jesus said to his disciples, "a time is coming when anyone who kills you will think that he is offering a service to God" (John 16 v 2). A word of warning to them. You'd think they might have taken it, but in fact... we are told that all except John died for their faith.

Now just why did they, and many after them, feel that they should defend their faith to the limit? Maybe because they knew that it was more than their lives were worth to abandon it...

Archive

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Products Available

- **CAST1** – Cash Book program from Soft Rock Software (£29.95 inc p&p) for use by individuals or small companies. Up to 10 cash books, analysis in 26 'columns', cheque payments, VAT analysis, analysis codes, etc.

- **DTP Images price change** – The DTP images discs from G.A.Herdman are now available for a standard price of £8.99 for one disc or £7.49 per disc if more than one are ordered at the same time.

- **Easiword** – "A true RISC-OS" word processor from Minerva for £39.95 (£36 through Archive) with all the usual features (except a spelling checker) plus the ability to select screen display between 30 and 132 characters across the screen and large characters for use by the visually impaired. Documents can be previewed on the screen. It should be available by the time you read this – the press release of 17th May said it would be available at the end of May.

- **FlexiFile** – Minerva have now produced another multi-tasking database in response to customer requests: aimed at small business, education and home hobbyists. It will apparently be available "at the end of May" at the "low price" (their words, not mine!) of £149.95 (£130 through Archive).

- **Man-at-Arms** – A new animated arcade adventure game for 4th Dimension, £19.95 (or £19 through Archive), written by the author of U.I.M.

- **Monitors galore** – We now have an extended range of monitors for the Archimedes. In the medium resolution range: in addition to the Acorn 14" at £250 we have the Microvitec Cub 3000 14" (also £250) of similar screen quality but in a rectangular metal case – much easier to stand your mugs of coffee on (!) – and it comes complete with video and audio leads so that the sound can be amplified by the monitor. (The minus side, in my view, is its styling – it's the same design of box as the Cub monitors for the old BBC range but in a cream colour to tone in with the Archimedes. So the dark surround of the glass tube, which is covered by the moulding in the Phillips monitors, stands out and changes the whole look of the thing. Also minus is the fact that the metal case tends to resonate if the volume is turned up. Well, it does on the one we tried. Also, the audio plugs, as wired by Microvitec, caused distortion.

You need to modify them by adding two 1k resistors to join the stereo channels into the mono input. We will modify the leads for you at no extra cost.)

Also medium resolution is the Phillips CM8833 (£280) which is physically similar to the Acorn monitor but it comes with a separate composite video input – useful for direct video work – and stereo speakers.

For higher resolution work, we have two new multi-syncs on our list, the Oak 20" colour monitor (£1550) which makes such a difference to the effective use of the computer – you can spread your applications windows around the screen and work on them much more easily.

To make use of the hi-res mono output of the 440 or 400/1 series computers, we have the Eizo 21" mono – paper white, flat screen at £1050.

- **Shareware 26** – contains: Desktop phone book, PCB designer, Player for Maestro tunes (uses less memory and so plays the huge tune files on S/W 11 that hitherto have had to be played using the old 'Arthur' version of Maestro), Voices and tunes for Maestro, Desktop file access editor, Program to display Draw files, Text adventure game.

- **Stop Press** – A Viewdata editor is now available for the Archimedes. £30 + VAT from the Advisory Unit in Hatfield.

- **Teletext Adaptor** – Ground Control are offering a Teletext adaptor for the Archimedes for £60 inc VAT. (See Richard House's article in Archive 3.7 p 43.) The hardware bears a striking similarity to the UTA1 as supplied by SCML (Solidisk) but the software has been completely re-written by a different programmer. It works under Arthur but on RISC-OS it is multi-tasking. If you already have a Solidisk BBC Teletext adaptor, Ground Control will sell you the new software plus an Archimedes lead for £25 inc VAT. (*If anyone buys the new software, do let us know how good it is. Ed.*)

- **Teletext Server for Econet** – XOB have developed RISC-OS multi-tasking software to work with the Morley Teletext Adaptor to allow BBC's, Archimedes and A3000's on a network to download Teletext pages from the one adaptor. The software alone costs £87 +VAT or with the adaptor for £205.

- **The Art Machine** is the name of a "major art exhibition/workshop at the McLellan Galleries, Glasgow from 2nd June to 26th August. Topologika will be selling the "Art Machine" Software pack at the exhibition for £19.95 (or £29.95 after the close of the exhibition). The pack consists of five concept keyboard driven programs on maths and art: Fractal Trees, Snowflakes, Cyclic Story, Patterned Tiles, Moving Squares.
- **Z88Link** – Dudley Education Computer Centre have produced a Z88 link that does not require a chip at the Z88 end (and presumably doesn't require

you to have PipeDream to provide you with the Z88 filing system module at the Archimedes end). The software on its own is £18 and combined with a lead, £26. The lead on its own is £10. They do a network licence for £54. (All prices are exclusive of VAT and carriage.)

Review Software Received...

We have review copies of the following : Z88 link, Zeridajh video digitiser, Splice, CAST 1 Cash Book, Maddingly Hall, Stop Press. **A**

Forthcoming Products

- **Dongle-free (wrong) Impression** – We and other magazines misunderstood the Computer Concepts press release. We thought that their dongle-free version of Impression for use on network licences was about to be released, so we mentioned it in the Products Available section in the April issue. Unfortunately, it is still not ready but is promised to be released 'in the summer'.

- **Laser Direct** – Computer Concepts are threatening the imminent arrival of their 'Laser Direct'. For £999 +VAT, (or £1080 through Archive) you get a Qume laser printer (without its driver p.c.b.) plus a podule and cable to drive it directly from the Archimedes. The claims for its printing speed are very impressive and, for the price, it has to be a good buy. The theory is that they should be available by the time you read this but we haven't had one to look at yet.

Also in preparation is an adaptor (podule + software) to allow a Canon LPB-4 printer to be directly driven from the Archimedes giving 300 or 600 d.p.i., again at the same sort of high speed. However, this project looks further off than the Qume one. For 600 d.p.i., CC recommend a 3Mbyte (sic) Archimedes!

- **'Freddy Teddy Nearly Ready!'** – So runs the delightful headline on Topologika's press release. Apparently, they are porting Freddy Teddy titles across from the Nimbus to the Archimedes. It's educational software for young children in case you hadn't guessed. Also 'nearly ready' are Tiny Logo and Tiny Draw: both again for young children. On Topologika's list of forthcoming titles are Astro – a desktop space exploration pack, Unitrivia – a nat-

ional curriculum catchup quiz, Giant-Killer Support Disc – a graphic-based introduction to their maths adventure game and Account Ability – teach yourself all about computerised accounts. **A**

!works

!works tools #1

£10

Essential Archimedes programming tools.

Enables users' applications to output DXF files compatible with !Draw. The DXF (Data Interchange) format is used for input and/or output by several popular vector graphics packages including !Draw, AutoSketch, Euclid, LinCAD, WorraCAD and PDT.

DXF files can be read by humans, merged and edited in !Edit and ported to and from other computers.

!works tools 1 contains an explanation of a version of the DXF file format as understood by !Draw with lots of examples, BASIC DXF library PROCs and model programs. Essential for Archimedes programming in any language.

Incorporate your own vector graphics in DTP!

Jim Markland
4 Shalford Close
Cirencester
Gloucester
GL7 1WG

RISC-OS only. Needs 1MB or more.

Hints & Tips

- **Caverns** – A simple map and the passwords are given at the end of the magazine on page 60. Neil Berry

- **Clear a line** – To clear a text input in an editable field, press <ctrl-U>. For example, you can use this to clear the filename before typing a new entry. Philip Armstrong

- **!Draw** – Someone mentioned converting sprite images to object orientated !Draw images. I have used a graph program and converted the sprite it created to a !Draw file by zooming up and drawing over the sprite. If you keep to, say, the bottom left of each pixel, it works OK and gives a much better printed image.

To get vertical and horizontal lines, use the edit coordinated facility. Get one end correct then note its x or y location and then edit the other end to match it.

If you have typed some incorrect text into a draw file, for example 'Fig 4.5' needs to be changed to 'Fig 4.6', then you would normally have to re-type the line and be careful to locate it in the same place. If characters are changed leaving the string length the same then you could use !Edit to search and replace the text, once the draw file has been dragged onto the !Edit icon. Strings could also be padded out with spaces if a shorter replace string is required, but for a longer string it is usually easier to re-type in !Draw. Philip Armstrong

- **DXF files** – Inclusion of a 41 group in TEXT entities permits characters with varying aspect ratios. A value of 0.5 matches the system fonts. Jim Markland.

- **Elektor sound sampler** – In December's issue of the Netherlands edition of Elektor (November in the U.K. edition) they published a D.I.Y. sound sampler podule. This podule has been built frequently but there is one small problem. There are no commands provided to use the sampler so it is difficult to use it in your own software. I decided therefore to write a module.

The module makes use of a timer within the 6522 on the board. This results in a very accurate sample-time. To make use of the module, you need to set a

jumper on the podule which connects the 6522-IRQ-line to the FIQ-line of the Archimedes.

Holding the podule with the 64-way-connector towards you and the print header at the right, you can place the jumper vertically at the right bottom of the print header.

Now you can use the module. There is a SWI included:

ElektorSampler_Sample (&500)

R0 = Start address of the sample buffer

R1 = End address of the sample buffer

R2 = Sample time in μ s

R3 = Minimum level to start sampling

R4 : bit 0: This bit defines the quality of the sample.

Low quality sampling must be used unless you are prepared to allow the screen to be disabled. 0 = high quality sampling, 1 = low quality sampling.

bit 1: This bit defines whether the low order byte of the address where the sample is written to, must be placed on the userport or not. This enables you to take multi-channel samples (e.g. stereo) using an analogue multiplexer (e.g. HEF 4051). When you're not using this option, leave the bit '0'. 0 = no output to the userport, 1 = output to the userport

Leave unused bits '0' for upward compatibility

After calling this SWI, the screen will be disabled during the sampling. While waiting for the minimum level, the border will be coloured yellow – whilst sampling, the border will be red. As long as the border is yellow, you can quit by pressing <escape>. The buffer will be filled with linear 8-bit signed numbers.

The minimum sample-time that can be used on a normal Archimedes is about 9 μ s. The minimum sample-time that can be used with the ZN427 (the ADC) is approx. 12 μ s.

The module could be used with the Armadeus sampler if Armadeus software were suitably modified. Since Armadeus is written in BASIC this should be possible.

As far as I'm concerned this module may be copied freely provided that my name, as author, remains within the software.

Questions or suggestions? You can contact me via Archive.

To conserve space, we have stripped the comments out of this listing. The full commented listing is available on the monthly program disc.

```

10 REM >SamplerSrc
20 REM Written by J.P.Hendrix
30 start=4:end=10:speed=9:ioc=8
   :rd427=5:wr427=6:bs6522=7:level=11
   :flags=12
40 DIM Code 1000
50 FOR Pass=4 TO 7 STEP 3
60 P%=0
70 O%=Code
80 [   OPT   Pass
90     EQU D  0
100    EQU D  0
110    EQU D  0
120    EQU D  0
130    EQU D  Title
140    EQU D  Help
150    EQU D  0
160    EQU D  &500
170    EQU D  Handler
180    EQU D  Table
190    EQU D  0
200
210    EQU S  "Elektor Sampler
        Module 1.03 (c) copyright
        22 Apr 1990 by J.P. Hendrix"
220
230 .YelBorder
240    EQU B  0
250    EQU B  24
260    EQU B  255
270    EQU B  255
280    EQU B  0
290    ALIGN
300
310
320 .Handler
330    STMFD R13!,{R0-R12,R14}
340    CMP   R11,#&00
350    BNE   UnknownSWI
360    MOV   flags,R4
370    MOV   start,R0
380    MOV   end,R1
390    MOV   speed,R2,LSL #1

400    SUB   speed,speed,#2
410    AND   level,R3,#&7F
420    STMFD R13!,{start,end,speed}
430    SWI    "I/O_Podule_Hardware"
440    BIC    R0,R1,#&00FF0000
450    ORR    wr427,R0,#%000<<11
460    ORR    rd427,R0,#%010<<11
470    ORR    bs6522,R1,#%101<<11
480    MOV    ioc,#&3200000
490    STMFD R13!,{wr427,rd427,
                                     bs6522,ioc}

500
510    MOV    R0,#0
520    MOV    R1,#3072
530    TST    flags,#1
540    SWIEQ  "XOS_UpdateMEMC"
550
560    MOV    R0,#0
570    MOV    R1,#24
580    SWI    "OS_ReadPalette"
590    ADR    R0,OrgColour
600    MOV    R2,R2,LSR #8
610    STRB   R2,[R0,#2]!
620    MOV    R2,R2,LSR #8
630    STRB   R2,[R0,#1]!
640    MOV    R2,R2,LSR #8
650    STRB   R2,[R0,#1]!
660
670    MOV    R0,#12
680    ADR    R1,YelBorder
690    SWIEQ  "OS_Word"
700
710    MOV    R1,#&0C
720    SWI    "OS_ServiceCall"
730
740    LDMFD  R13!,{wr427,rd427,
                                     bs6522,ioc}

750
760    MOV    R0,#&00
770    STRB   R0,[ioc,#&38]
780
790
800    MOV    R0,#SamplerEnd-
                                     SamplerBegin
810    MOV    R1,#&1C
820    ADR    R2,SamplerBegin
830    .PokeLoop
840    LDR    R3,[R2,R0]
850    STR    R3,[R1,R0]
860    SUBS   R0,R0,#4
870    BPL    PokeLoop
880

```

Hints & Tips

```

890      LDMFD R13!, {start, end, speed}
900
910
920      TST    flags, #2
930      MOV    R0, #255
940      MOVEQ   R0, #0
950      STRB   R0, [bs6522, #02*4]
960      AND    R0, speed, #&FF
970      STRB   R0, [bs6522, #06*4]
980      MOV    R0, speed, LSR #8
990      STRB   R0, [bs6522, #07*4]
1000     MOV    R0, #&40
1010     STRB   R0, [bs6522, #11*4]
1020     MOV    R0, #&00
1030     STRB   R0, [bs6522, #13*4]
1040     MOV    R0, #&C0
1050     STRB   R0, [bs6522, #14*4]
1060     AND    R0, speed, #&FF
1070     STRB   R0, [bs6522, #04*4]
1080
1090     STRB   R0, [wr427]
1100     .WaitLevel
1110     SWI    "OS_ReadEscapeState"
1120     BCS    Exit
1130
1140     LDRB   R0, [rd427]
1150     STRB   R0, [wr427]
1160     TST    R0, #&80
1170     RSBEQ  R0, R0, #&100
1180     AND    R0, R0, #&7F
1190     CMP    level, R0
1200     BHI    WaitLevel
1210     STRB   R0, [wr427]
1220
1230     SWI    "OS_IntOff"
1240
1250     TST    flags, #1
1260     MOV    R0, #12
1270     ADR    R1, RedBorder
1280     SWIEQ  "OS_Word"
1290
1300     MOV    R0, speed, LSR #8
1310     STRB   R0, [bs6522, #05*4]
1320
1330     MOV    R0, #&40
1340     STRB   R0, [ioc, #&38]
1350     .SampleLoop
1360     CMP    end, start
1370     BPL    SampleLoop
1380
1390     MOV    R0, #&00
1400     STRB   R0, [ioc, #&38]

1410     .Exit
1420     MOV    R0, #&7F
1430     STRB   R0, [bs6522, #14*4]
1440     MOV    R0, #&00
1450     STRB   R0, [bs6522, #13*4]
1460
1470     MOV    R1, #&0B
1480     SWI    "OS_ServiceCall"
1490     SWI    "OS_IntOn"
1500
1510     MOV    R0, #0
1520     STRB   R0, [bs6522, #02*4]
1530
1540     MOV    R0, #3072
1550     MOV    R1, #3072
1560     TST    flags, #1
1570     SWIEQ  "OS_UpdateMEMC"
1580
1590     MOV    R0, #12
1600     ADR    R1, OrgColour
1610     SWIEQ  "OS_Word"
1620
1630     MOV    R0, #124
1640     SWI    "OS_Byte"
1650
1660     LDMFD R13!, {R0-R12, PC}^
1670
1680     .UnknownSWI
1690     LDMFD R13!, {R0-R12, R14}
1700     ADR    R0, Error
1710     ORRS   PC, R14, #2^28
1720
1730     .SamplerBegin
1740     STRB   start, [bs6522, #00*4]
1750     LDRB   R0, [rd427]
1760     EOR    R0, R0, #&80
1770     STRB   R0, [start], #1
1780     MOV    R0, #&C0
1790     STRB   R0, [bs6522, #13*4]
1800     STRB   R0, [wr427]
1810     SUBS   PC, R14, #4
1820     .SamplerEnd
1830
1840     .OrgColour
1850     EQUB   0
1860     EQUB   24
1870     EQUB   0
1880     EQUB   0
1890     EQUB   0
1900     .RedBorder
1910     EQUB   0
1920     EQUB   24

```

```

1930      EQUB 255
1940      EQUB 0
1950      EQUB 0
1960
1970 .Table
1980 .Title      EQU$ "ElektorSampler"
                  +CHR$(0)
1990      EQU$ "Sample"+CHR$(0)
                  +CHR$(0)
2000 .Help
2010      EQU$ "Elektor Sampler"+CHR$(
(9)+"1.03 (22 Apr 1990)"+CHR$(0)
2020 .Error
2030      EQU$ 1
2040      EQU$ "Unknown Sampler SWI"
                  +CHR$(0)
2050 ]
2060 NEXT
2070
2080 SYS "OS_File",10,"ElektorSam"
                  ,&FFA,,Code,0%

```

• **Extra Speed in high res modes** – You can use SWI "OS_UpdateMEMC" to deny VIDC DMA access to the video RAM, which returns to the processor the bus bandwidth that was being used by the video system. Turning off VIDC's access to the memory blanks the screen but makes the machine go faster even than in MODE 0. To kill VIDC's access to memory: SYS "OS_UpdateMEMC",0,1024 To re-enable access use SYS "OS_UpdateMEMC",1024,1024.

While the screen is thus disabled, you can still write to it as normal and the results will be there when it is switched back on. This short program shows the enormous speed gains possible (49% in MODE 15, 120% in MODE 24) – it can reduce by a third, the time taken for a MODE 15 ray trace. Sean Kelly

```

10 mode=MODE
20 MODE 0
30 I%=0: T%=TIME
40 REPEAT: I%+=1: UNTIL TIME>=T%+100
50 MODE mode
60 J%=0: T%=TIME
70 REPEAT: J%+=1: UNTIL TIME>=T%+100
80 SYS "OS_UpdateMEMC",0,1<<10
90 K%=0: T%=TIME
100 REPEAT: K%+=1: UNTIL TIME>=T%+100
110 SYS "OS_UpdateMEMC",1<<10,1<<10
120 PRINT"Loops per second:"
130 PRINT"Normal mode 0 ";I%

```

```

140 PRINT"Normal mode ";mode;" ";J%
150 PRINT"Blanked mode ";mode;" ";K%
160 PRINT"Speed up ";(K%-J%)/J%*100
    ;"%

```

• **FormEd** – I was very interested to see the tip on !FormEd in the May issue of Archive which really does make it easier to use. However, there is a slight snag with it as published as it is possible to close the sprite viewing window which cannot then be re-opened. Also, it is possible to activate the 'Tool' window which allows editing of the sprites if the following changes are made to the !RunImage file.

```

1890DATA "Load templates>m_templates%
    ,Save templates>m_Savetemp%, Show
    Sprites, Show Toolbox#, Quit"
3090ELSE PROCmergesprites (FNstring0
    (q%+44)):PROCspriteinfo
9781WHEN 4 : PROCspriteinfo
9782WHEN 5 : PROCencodepal (0,15) :
    PROCfront (palette%): PROChtpal
9790WHEN 6 : PROCfinish : END

```

Line 1890 adds two new options to the iconbar menu ('Show Sprites' and 'Show Toolbox'). Line 3090 has the REM removed which allows merging of sprite files. Lines 9781 and 9782 are new and implement the opening of the sprite and tool windows. Line 9790 needs changing as 'Quit' is now the sixth item on the menu.

Some of the sprite editing routines seem to be missing from the !RunImage file (such as the 'spray can') so I just created a new blank sprite and altered the template file so that the non-working options don't appear!

As noted in the magazine, !Paint is better for creating sprites but these simple changes make !FormEd much more useful. One benefit is that the sprites edited in !FormEd are displayed in the windows where they will actually appear when the application runs. Paul Hobbs

• **Function key strips** – In the past, many have tried to write a program which generates one or more function key-strips. In most cases, the graphics were not quite satisfying. When using MS-DOS software, the problem arises that you really need four rows (instead of the standard three) to cater for all possibilities: F-key, <shift-F-key>, <ctrl-F-key> and <alt-F-key>. To solve this problem I have

made two draw-files, one for a 3-row function key-strip and one for a 4-row function key-strip.

Both files require the presence of the font 'Hornerton.Medium'.

As an example, I have made a function key-strip for the MS-DOS program WordPerfect version 4.2. This file also requires the presence of the font 'Corpus.Medium'.

From where I stand, I find the result of the Drawfiles better than what I've seen so far. (Available on the monthly program disc.) Maurice Hendrix

• **Hard disc and memory usage** – I was interested to read about module killing in your First Word Plus column. I have a 1Mb machine and need all the memory I can get, so I have already experimented with simple module killing routines.

Firstly, I altered all my !run files to keep track of Clib, FPE and the other common modules and kill them if they are no longer needed. This used a system variable for each module that stored the number of applications using it. This worked but had several drawbacks. The changing of all !run files did take a lot of work and each application left open its !run file until it was quit. As a result, I decided that manual module killing or Resetting is a better solution. One interesting point highlighted by this, is that !Edit suffers a fatal error and all work is lost if the FPE is killed even though it does not need it!

The one thing that I have found extremely useful is the setting up of a good hard disc structure and a !boot file. This has saved memory both on the disc due to duplication and when loading applications due to fewer icons needed to be loaded. It has also given me quicker and easier access to programs via the new task option.

One thing that should be noted by hard disc users is that although directories allow a nice structure, they do use memory and also slow the access to certain parts of the disc, so don't go overboard creating directories for everything.

I will try to explain the structure of my hard disc. I have in my root directory the following directories and a !boot file.

!fonts	Outline Fonts
!system	System Modules
Art	Artisan, !Paint etc

Cad	!Draw etc
Games	!Triv etc
Library	Command line programs
Misc	My working directory
Text/DTP	!Edit, !Impress, !PrinterDM etc
Utilities	!FormEd, !Hand, !Configure etc

Others could include Sound, spreadsheets and languages etc. Try to keep associated programs together but don't have directories with lots of applications as all the icons are loaded and waste memory. Keep commonly used programs one level down and others in sub directories. This is especially true for the utilities directory.

The next stage is to move all the commonly used modules into the !system.modules directory. This avoids duplication, ensures a module update is used by all programs and also simplifies things. The most common modules found are FPEmulator and Clib. Well-written programs will already use !System but some don't and they will need their !run files modified. The rmload commands need to load from :4.\$\$. !system.modules. If the !run file does not contain the rmload commands it is probably best to leave its modules where they are unless you know what you are doing. Finding modules can be done using simple utilities such as !hand (helping hand) from the Data Store to search for the file type &FFA.

Probably the most important part of a good hard disc setup is its !boot file. This gives the user an ideal chance to customise their system. My !boot file shown below sets up various system variables that perform a range of functions.

```
| !Boot file for hard disc
| Set variables for directory abbrevs
Set r adfs::BigHardNol.$
SetMacro u <r>Utilities.
SetMacro a <r>ART.
SetMacro d <r>Text/DTP.
SetMacro g <r>GAMES.
SetMacro System$Path <r>!System.
SetMacro sm <r>!System.Modules
| Set Alias to emulate two common
                                Unix commands
Set Alias$LS Cat %0
Set Alias$CD Dir %0
| Setup directories to be searched
                                for a run command (using
```

```

        abbreviations to keep line
            to <255 chars )
SetMacro Run$Path %, <sm>., <r>L*.,
    <d>1*., <r>CA*., <a>, <d>, <r>M*.,
    <d>PI*., <r>PC., <u>, <u>CT*., <u>F*.,
    <u>A*., <u>B*., <u>C*., <u>D*.,
    <u>FO*., <u>L*., <u>T*., <u>M*., <r>T*.,
    <r>S*., <g>I*., <g>B*., <g>A*., <d>!i*.
| Setup directories to be searched
    for a load command (using
        abbreviations to keep line
            to <255 chars )
Setmacro File$Path %, <sm>.,
    <r>Library., <u>L*., <d>!i*.
| run common applications !boot files
    to emulate the system seeing the
        application without cluttering
            the $ dir.
<a>!Draw.!Boot
<a>!Paint.!Boot
<d>!Edit.!Boot
<d>!Impress.!Boot
<u>FILES.!SPARK.!BOOT
| set any commonly used key strings
Key 1 *DESKTOP|M
Key 2 EDIT|M
| run desktop and display root
directory
Desktop Filer_OpenDir
adfs::BigHardNo1.$

```

The !boot file starts by defining a series of system variables that are to be used throughout the file. They include abbreviated variables to represent commonly used pathnames. System\$Path is also defined here.

The next section defines two alias's that emulate common Unix system commands. This is only of use if you switch operating systems commonly and tend to accidentally type in the wrong commands. A similar set could also be set up for PC users although a clash of the "dir" command would occur.

The next two sections are similar and set up the variables Run\$Path and File\$Path. Firstly, Run\$Path can be used to define all the directories that you wish to be searched when a run program command is issued. Similarly File\$Path does the same for loading files. They both include the first path which refers to the current directory.

The system variables defined at the start have been used extensively and the * wildcard to keep the line shorter than the 255 character maximum. Be careful when using wildcards because a new directory could also match the search instead of the intended directory. As an alternative to this, a series of paths could be placed into system variables i.e. Run1\$Path, Run2\$Path etc and then added together to give the complete Run\$Path. Be careful when using system variables to get the correct punctuation. Each path must end with a full stop "." although this can be included at the end of the system variables.

The main reason for doing this is to allow the user to use the "New Task" option of the task menu. If all the directories are correctly listed in this section, you will be able to enter "Edit" into the "New Task" option and the program will install itself onto the icon bar. This eliminates the need to know where in the directory structure it is. The same goes for loading a program or module. You can now tuck away those little used programs and still call them up as long as you know their name. The general effect is the same as if everything is in the library although loading commands can also be used.

I have found it useful to emulate the system seeing commonly used applications such as !Draw, !Paint and !Edit. To do this all you must do is run each application's !boot file. This will setup all the icons and system variables. This means that, for example, a draw file can be loaded without the application having being seen.

A Hard disc !boot file is also the ideal place to set up any commonly used key strings as well as loading any important modules.

Finally, the desktop can be called and I find it useful to open up the root directory. This can be done by the Filer_OpenDir command. Alternatively, another obey file can be run after the desktop has been entered by the use of the -file option. If this is the case, it may be useful to create an application called !boot and rename the !boot file to !run. The second obey file can then be hidden inside this directory.

To create and set up the !boot file... (1) Run !Edit (2) Create obey file (icon menu) (3) Type in !boot data (See above) (4) Save as !boot (in root directory) (5) Press <f12> and type

OPT4,2
Configure drive 4
Configure boot

Philip Armstrong

• **Hourglass** – A quick hint for those writing a BASIC program using the Hourglass. Often, if an error is generated from BASIC when the hourglass is being used, it stays on the screen. This can be cured by SYS“Hourglass_Smash” or, if you have already done your error checking, SYS“” causes a system error which has the same effect. Philip Armstrong

• **INKEY problems** – If you have a loop which executes continuously and rapidly, you might want to use:

```
key%=INKEY(0):IF key%=64  
PROC_Fred ELSE IF  
key%=65 PROC_Edith
```

to detect a keypress. However, remember that you should have only one such INKEY statement in the loop even if you want to cater for many different key presses because a single keypress can only be detected by one INKEY(0) instruction. Steve Kirkby.

• **Keyboard cleaning (A300/400 series)** – The keyboard that is supplied with the computer is of the open Printed Circuit Board type. That is, a conductive film on the base of each key makes contact with large solder plated areas called lands on the main PCB. This makes for a cheap and reliable keyboard but it does have its problems because of its exposure to the air in that dust can and does get in.

I've had my Archimedes A310 for over 2 years now and my wife lets it live in the living room with us. I suppose I should keep the keyboard covered with something when not in use but I've never got round to doing this. Consequently, the keyboard has had to put up with me eating biscuits, sandwiches and other unmentionables while typing. I suppose the inevitable had to happen and one day the keyboard rebelled! I had began to noticed over a period of several days that the space bar and left cursor key where playing up until they refused to work at all. Of course, this happened a week after the guarantee had run out!

Visions of massive bills loomed before me so I decided to undertake the task of opening the

keyboard case and having a look! I first switched off the Archimedes and unplugged the keyboard cord from the computer. I removed the mouse and turned the keyboard face down with the Reset button towards me. I noted that eight large, long hex screws held the back section of the keyboard case on. After removing these I just lifted the back section away and placed it somewhere safe. The Reset button looked slight delicate so I removed it by simply pulling it off. I made a mental note of which way round it came off.

I had a good look and there were seven large, short hex screws holding the top keyboard casing to the main PCB frame. I removed these screws and lifted the PCB off, putting the top casing away to another safe place. I was half expecting the key tops and switches to try and escape at this point but they are firmly attached to a metal frame!

Biscuit supply – Turning the PCB over and looking at the top surface between the key tops I was amazed to see a surprising amount of dust and what looked like a secret supply of Burtons biscuits! I duly removed this with a dry paper towel and again placed the board face down after I had a good look at the electronics on the board, but I resisted the temptation to touch (I suggest you do the same).

All that now remained to do was remove the twenty small hex screws holding the PCB to the switches. I started with the black screw at S94 position (this is written on the PCB) and noted that this was the only small screw not actually threaded on to a switch. I removed the other nineteen screws and gently lifted the PCB off the metal frame holding the keys on.

The contact plates of all the key switches where now exposed and they consisted of thin silver discs which when pressed make contact with the PCB lands and therefore closed the contacts. These plates looked extremely fragile but clean so I left them well alone!

Cleaning – The PCB lands were dirty, especially around the Space and Left Cursor key positions and, being very careful not to put any grease from my paws onto the board, I wiped the entire PCB with a dry paper towel. Reassembling the keyboard was easy. I just placed the PCB face down on to the metal frame holding the keys and lined up the small screws positions. A good tip in reassembling

something like this is to begin placing the screws in from opposite ends and not to tighten up any of the screws until they are all in place.

Once that was done, making sure that the black screw was in the correct position, I placed the top section face down on the work table and positioned the assembly down onto it, again fitting the seven large short hex screws in place. I refitted the Reset moulding into place with a resounding click and finished off by screwing down the last eight large long hex screws into place. I turned the complete keyboard over and plugged it back into the Archimedes and I'm glad to say it works a treat! Stuart Halliday

- **OsSys module** – Shortly after the release of the OsSys module, I was told that one couldn't use SWI's that needed a pointer to a buffer because no such facilities were made available. I argued that this was very easily implemented and changed the module accordingly. When doing this, I also noticed a minor bug in the module. When a string longer than 300 characters is passed, the module is supposed to generate an error. This works fine but, due to a problem during the development, I mistakenly thought that the pipeline was playing up when generating this error. (Not all of the error text was displayed: the first 4 characters were missing). I solved this by adding 4 to the PC when generating the error. Quite wrong of course. I discovered that not the pipeline but I was to blame. I had forgotten to put the error number (4 bytes) in before the error message.

To upgrade the OsSys module to version 1.8, load the source code into BASIC V and change/add the following lines:

```
10 REM >OsSysSrc18
350 EQU$ "1.80 (05 Apr 1990)"
600 MOV R3, #500
610 SWI "OS Module"
611 ;By claiming a larger workarea
    than required by the
612 ;the module, you can use the
    top of the work area to
613 ;create workspace for SWI calls
    that require pointers to
614 ;such a workspace. Eg. calls to
    WIMP or VDU.
```

```
650 EQU$ "OsSWICalls v1.80 by M.
    Hendrix => Installed"
2510 REM remove this line. It's
    incorrect
3180 EQU$ &01 ;Error number
```

Save and run the program.

The new module will claim more workspace than it actually needs. The top 200 bytes can thus be used for SWI buffers. You can use *MEMORYA to edit the buffer(s). If you need more space for a buffer just change the value #500 in line 600 to your desired amount of memory. (Don't forget to add 300 bytes for the module itself!) Maurice Hendrix

- **Random number generator** – If you use the use the random number generator (RND in BASIC), it must be initialised with something really random, such as the current time. Otherwise, the same numbers will be produced every time the program is run. The otherwise excellent game !Yahtzee on Careware 4 suffers from this problem but it can easily be solved: insert the line 123 Junk = RND(-TIME) and then every game is different. Jonathan Puttock

- **The Dreaded CLI!** – One of the nicest aspects about the Archimedes is the Configure command. This command is often forgotten about as it lies in that terrible place called the Command Line Interpreter (CLI) accessed by pressing the dreaded function 12 key. One of the many things that the Configure command does and seems to get lain aside is the WimpFlags options. This very useful command determines the action of all the windows used by RISC-OS in as far as it controls the two types of window movement, resizing and scrolling. What two types?, I hear you ask.

Status – Well if you've never used the WimpFlags command before then you have probably put up with the kind of windows which, when you change their size or move them, all you get is a large dotted outline which turns into a solid window when you release <select> or <adjust>. Now you have an alternative. If you first press F12 from the Desktop and type in *STATUS <return> you'll get a large list of items and near the end is a line Wimpflags x, this x number (it may be 0) is actually the decimal representative of a binary pattern of this number which switches on or off the various options under this command.

Hints & Tips

If you type in *HELP WimpFlags <return> then the following should appear:

*HELP WimpFlags

==> Help on keyword WimpFlags

*Configure WimpFlags sets the

default actions when dragging
windows, as follows:

bit 0 set: continuous window movement

bit 1 set: continuous window resizing

bit 2 set: continuous horizontal scroll

bit 3 set: continuous vertical scroll

bit 4 set: don't beep when error box
appears


Syntax: *Configure WimpFlags <number>

Simply put, if you where to type in say:

*CONFIGURE WimpFlags 1 <return>

and press <ctrl-break> (you need to do this each time you enter new values to actually change the values!) you'll see that if you move any window it will be instant! If you want to try some more

'configuring' try changing the WimpFlags to 2 to see only instant window resizing or 3 for both. (Don't forget to press <ctrl-break> afterwards!) If you do not like this new look, simply change Wimpflags back to 0. The next two options concern the scroll bars and these are really useful. If you change WimpFlags to 8 you'll see that by dragging the pointer up and down the vertical bar you'll get a smooth scroll effect, much better than constantly clicking the arrow icons! Try WimpFlags set to 4 for horizontal scroll or even 12 for them both at the same time.

Error – The last option just stops the error box beeping at you. Try WimpFlags set to 16 and then Select an empty disc drive. Remember you can combine any of these together by simply adding their numbers together and configuring the WimpFlags. Try WimpFlags set to 31, this is my favourite! Stuart Halliday 

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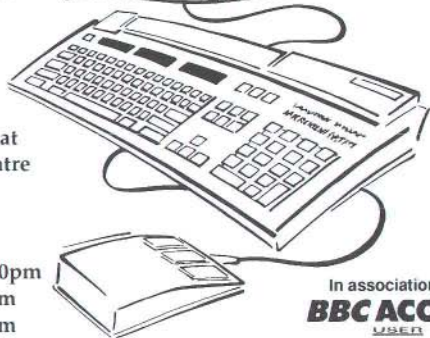
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Comment Column

• **Buzz words** – A few Archives ago you proposed a list of Archimedes related words and abbreviations with explanations, etc. Since then I have been more critical when reading the PRM or the magazine or even the built-in *HELP texts. I came up with a few terms. I understand some of them but there are a few (esp. the abbreviations) which seem to have unexpected pronunciations. For example: until recently I believed that SCSI should be pronounced as separate letters (es-see-es-eye) and MEMC as just 'memk'. However, it appears that they should be 'scuzzie' and 'mem-see'. So it might be very handy to know not only what an abbreviation means but also how one pronounces it. The ones without any written pronunciation are just spoken as the individual letters. Here's my list:

SCSI ('scuzzie')	Small Computers Software Interface
MEMC ('mem-see')	MEMory Controller
VIDC ('vid-see')	VIDeo Controller
ARM ('arm')	Acorn Risc Machine
RISC ('risk')	Reduced Instruction Set Computer
IOC ('I-O-see')	Input Output Controller
DMA	Direct Memory Access
RFS	RAM Filing System
VFS	??? (PRM page 785)
RMA	Relocatable Module Area
PRM	Programmers Reference Manual(s)
IIC ('I-squared-see')	Special hardware interface
RPC	??? (PRM page 785)
ADFS	Advanced Disc Filing System
RISC iX ('risc-ix')	Acorn's version of Unix
SYS ('siss')	BASIC command to call a SWI
SWI ('swy')	SoftWare Interrupt
CLI ('cly')	Command Line Interpreter
WIMP ('wimp')	Windows Icons Mouse Pointer
FX ('effects')	* commands from BBC B

Maurice Hendrix

• **Irlam's iScan** – This is an A4-size scanner and, in contrast to some models reviewed recently, is extremely easy to use. However, it's sheet-fed, so if one wants to scan pages from books it might be difficult to scan directly. Photocopy first – or be very careful.

The general ease of use is partly due to the excellent software supplied. At present, the only adjustments (apart from the dimensions of the scanned image) are contrast and whether the original is to be scanned at 100 or 200 d.p.i. Further software is being developed and will be available as an upgrade – which I think will be free. As far as I know, the new software will incorporate some form of file compression and I hope a 'black and white' scanning mode for line drawings as well. Some 'manipulation' of the grey scales may also be included.

When scanning some types of glossy photos, there's a tendency for them to stick to the roller and not be pulled through the scanner. As the manual explains, this may easily be overcome by passing the photo through with a piece of very slightly matt overhead transparency film.

At £665.85 inclusive, the price is higher than some other scanners but the Beebug Scavenger A4 with sheet feeder costs a total of £558 (member's price) and Beebug are offering the Irlam iScan for £639.95. If the iScan provides significantly higher quality scans then it's probably worth the higher cost to many users.

• **Pineapple Colour Video Digitiser** – I am writing to say how impressed I am with both Pineapple software and the quality of their newly released colour video digitiser. Despite the fact that Pineapple were very busy fulfilling orders, they managed to deliver to me a unit within two days of ordering it. This is a company which we should welcome to the Archimedes market after they have done so well providing software for the Acorn BBC's in the past.

This expansion card allows images from either a live video camera or video tape to be captured/digitised in real time in 16 bit (65,536) colour at a resolution of 512 by 256 pixels. The colour images can be used immediately in applications such as DTP or AIM (Image Analysis).

I cannot praise them enough for the look and quality of the manual. Rather than the normal minimum collection of sheets stuck together, this one comes in an attractive thin blue A5 sized ring binder with the company and product names clearly visible on the outside. This may sound insignificant but I certainly don't relish pulling ten similar unmarked manuals off the shelf before I find the one I am looking for. When you open it, you will also find the quality of the paper and print well above the norm. The 65 or so pages contain a great deal of useful, carefully-considered background information and techniques as well as detailed coverage of the available commands and hardware.

They also have the foresight to write-protect the two supplied disks which I always consider a very wise move. I often wonder just how many people manage to delete important files from their master copies when hurriedly attempting to use a new piece of software. There are a couple of programs supplied on the disks and some example screens. The main program 'mainkeys' allows access to virtually all of the facilities through single key presses including live real time screen updating. Admittedly though an ARM3 is very useful if continuous flicker free updating or rapid frame storing is required.

The quality of the images appear to be very acceptable with a good colour match between the original and those displayed in 256 colour modes. Several save options are available including the ability to generate monochrome AIM files with 7 bits per pixel.

My only concern over the construction of the board (which otherwise is very good) was the large number of TTL integrated circuits. I do understand and realise that the fifteen or so devices are required for producing the necessary timing and buffering signals and that because of their nature they are not suitable for reduction into PAL devices. I think that a medium sized gate array might have been suitable considering the increase in reliability which this would give and their only slightly higher cost.

The complexity of this full width expansion card is justified though since there are a great many controls available; picture position and width, gain (contrast), saturation (colour) and lift (brightness).

The unit comes in two versions: 12 bits and 16 bits per pixel at costs of £285 and £315 excluding VAT respectively.

If you want a colour video digitiser, you should take a very careful look at this offering. Alan Barclay

• **Trivial Pursuit** – (The author responds!) I'll try to answer a few points raised in the April Archive by Philip Green. Firstly, sorry about the pointer moving about, but I preferred it like that. If you want to change it, search for and remove all the MOUSE TO commands in the compressed program '!trivprog'. I suggest you make a backup first and change that!!

There are approximately 3000 questions and, yes, there are a lot out of date. This is because the questions are identical to those in other older versions. Other questions are available on other machines, but I don't know if Domark intend to release them.

I have tested Triv with the PC emulator and it seemed to work correctly for me. If anyone does have any major problems, you can send them to me and I'll try to solve them (given time), but Triv is still better behaved than a lot of Archimedes games and a <ctrl-break> will usually solve everything even if it is undesirable.

There is also an undocumented series of system variables available to the start defaults for the timer etc. These can be found with short explanations in the !run file found inside the !Triv application. Philip Armstrong

• **What price service?** – We have had comments from a number of subscribers recently who have taken advantage of the special offers currently available for buying Archimedes computers from certain large dealers. The basic comment is that they regretted having made their decision as to whom to buy from simply on the basis of cost. Some of them were horrified by the indifference with which they were met when they found that some parts of their computer system did not work or were obviously not new but were either shop-soiled or just plain second hand. Cynics amongst you may think that I am trying to get people to buy their computers from us rather than anyone else. Think like that if you must if you are one of the unlucky ones who gets bitten, don't say we didn't warn you! Ed. **A**

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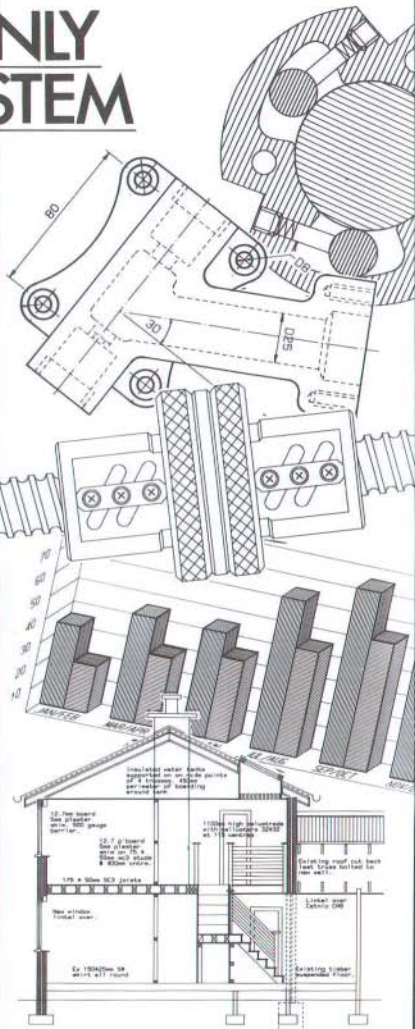
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Matters Arising

• **Careware Changes** – We are now raising so much money for charity through the Careware scheme that it no longer seems right to us to limit it to three recipient charities. We are therefore extending our donations to a wider range of charities. For example, we have sent donations to D.E.B.R.A. (a support group specific to a particular disabling disease), Telethon '90 and Cheshire Homes.

If you have had software published through the Careware scheme and would like money to be given to a particular charity, please send us full details of the charity including its aims and objectives, address and charity registration number. However, we retain the right to give as much or as little to each charity as we think fit. We will state in the magazine what donations we have made.

• **EFF Fonts** – Last month we published a comment about EFF fonts. (Archive 3.8 p13) We confirmed from another technical source that the comment was substantially correct but we did not check it with EFF. Although there was a degree of truth in the comments, there was also a degree of misunderstanding. Apparently, according to Ian Copestake, who sells EFF fonts, some of the fonts may have reached customers in an 'unfinished state' but this was not done deliberately. Anyway, I will let EFF speak for themselves. I hope that this incident has not caused them any loss of sales.

"In your May Issue you published a comment by Mr Ian Griffiths who experienced some problems with our NewLondon Fonts. Our simple policy is to provide a good personal service to our customers. We make each disc of fonts for each customer separately – if anything goes wrong, we simply replace it with a new one. Upon reading his comment, our first reaction was to send him a new disc just in case something had gone wrong with the original one: unfortunately he does not appear to be on our list of customers...

"Mr Griffith raises three separate points. Firstly, he claims that our fonts are not hinted and give poorer results than Trinity from Acorn. Our fonts are fully hinted and our final test is made by printing the whole set of letters and symbols on a 60 by 60 d.p.i.

printer at 18 points. This is equivalent to printing letters at 3.6 points on a laser printer but the size is large enough to clearly see the mistakes.

"Secondly, we are fully aware of the difference between Italic and Oblique but we thought we were doing a service for Acorn DTP users by calling both Oblique and Italic fonts Oblique. In order to use fonts with Acorn DTP, one has to type in a configuration file with the name of every font used and it is so easy to forget which is Oblique and which is Italic, resulting in an error: *Your fonts do not match DTP configuration*.

"Thirdly, we do not introduce any deliberate errors into the font files but we do insert a serial number into each file for each customer in order to be able to trace ownership. This has no effect on the Font Manager working but it is disliked by the FontEd program. We would like to point out that our licence conditions specifically forbid disassembly or changes of our font files. I do not think it is in any way restrictive, as any author of any software has a right to protect his/her product from being tampered with by third parties.

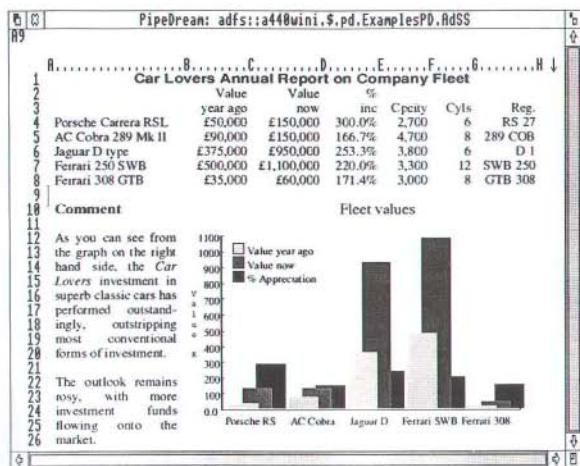
"Finally, I would like to point out that our font files occupy 3.5 Mbytes of memory and every byte counts. It is a commonly expected practice by software vendors to issue new versions of their programs as mistakes in old versions become apparent. Yet it seems that 3.5 Mbytes of font files are expected to be absolutely perfect first time."

Dr E. Detyna, Electronic Font Foundry **A**

Credit where it's due

• **EMR.** I recently bought a Midi interface from EMR which I thought was faulty. Mr Beecher rang me twice trying to find out what the problem was. He was unable to find anything wrong and gave me some advice over the phone at 3 p.m. on a Friday afternoon – the interface was delivered at 8.30 the following morning. The problem turned out to be a faulty Midi lead. This is the first company I have come across in five years of using computers that has given such good service after they have got my money. Norman Kidd, Tyne & Wear. **A**

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All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingsen's Presenter 2 and then loading the resulting graph back into PipeDream 3.

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DTP Column

Ian Lynch

Majid Anwar has told us of a much better way of solving the Acorn DTP font aspect ratio problem I mentioned a couple of months ago. For those who missed this, the problem was the fact that text aspect ratios cannot be altered in DTP. I suggested using paint to grab part of the screen as a sprite but Majid's solution is much better really and just shows that you shouldn't take everything I write down as "gospel"! If the text is imported as a draw file, the frame containing the draw file can be used to stretch and squash the image by dragging the frame toggles in the same way as any other graphic is cropped or scaled. This also has the advantage of giving better resolution print outs and saving memory. However, the other method now! The way Impression handles font styles and aspects is still superior since text can be edited after changing the aspect ratio.

More on scanners

I mentioned last time that improved scanner technology was on the way, but I didn't realise quite how good and how soon. Jim Irlam was demonstrating a Sharp colour scanner on Acorn's stand at the Which Computer? show and the results are almost unbelievable. (See also Comments on page 14.) The scanner records the information in 24 bit colour, 8 bits for each of red, green and blue. Since the data for a large scanned area with this resolution would take up huge amounts of memory, the data is streamed to disc so that a 1M machine is sufficient. Roger Wilson's ChangeFSI program is then used to give the best possible image from this data to display an 8 bit (256) colour image on the screen since the Archimedes video circuitry is limited to 8 bits. The results are astonishing photographic quality pictures, particularly using mode 21 and a multi-sync monitor. Mac users can get 24 bit colour images from scanned images but you need a lot of memory (and a lot of money) to do what this system is doing on a 1M machine. Colour images may not be too much use in DTP without very expensive printers at the moment, but colour pictures could be used to great effect in Genesis, for example. The

handling of bit images in the form of sprites is beginning to look like a bit of an Achilles heel for the Archimedes now and better grey scaling to compete with the Mac is certainly required if professional DTP is to be the goal.

Impression

Version 1.04 is now the latest with several bugs fixed mostly in fairly obscure areas. The scaling problem when multi-tasking Draw with Impression is now fixed. If you have an earlier version send your disc 1 and a self-addressed jiffy bag to CC for an upgrade.

Ovation

I have been sent some information with the specification for Ovation from Beebug. This is quite comprehensive but as far as I know the finished article is not yet available. One ominous thing is that spell-checking requires 2M of RAM. This seems to indicate that memory will be tight on a 1M machine. Ovation will retail at £99 and so is less expensive than ADTP or Impression. (*'Should be available in about three three weeks', they said on 23/5/90.*)

Tempest

There still seems to be some work to do on Tempest, but Tempest and Ovation appear to be lining up as direct competitors owing to their lower pricing. ADTP was first but the competition is now showing several advantages. (*'Tempest will be released next week. It's actually a pre-release version and the full release will be available six weeks after that', they said on 23/5/90.*)

Printing

One of the problems with DTP is the speed of getting the screen image onto paper. Computer Concepts have just announced a direct drive laser printer (actually a liquid crystal shutter array printer which is a more recent design offering greater economy and reliability without sacrificing quality) which will, I feel, revolutionise this side of the Archimedes. It requires 2M of RAM as the ARM is used to constitute the page in memory and then the image data is fairly thrown down a high speed

(2Mbit/sec) connection straight at the printer engine. A modified Qume printer is used and CC have used Acorn's outline fonts so that you do not need the expensive printer resident fonts.

In addition to this, what you see on the screen is definitely what you get on paper. To give an idea of speed gains, CC tested a Postscript printer (£3000) a Laserjet printer (£1400) and their printer with a complex page of graphics and text (the most realistic test for those interested in DTP). The Postscript printer took 5m 13s to print the page, the laser jet 4m 29s and the direct drive 1m 0s. Note that for text only, Postscript is much quicker than Laserjet and there is not much in it between Postscript and the Laser Direct. The big difference is the price – £999 +VAT which includes the software printer and interface. If you require really high quality, an interface and software to drive a Canon LPB-4 at 300 or 600 dots per inch is available at £249 (The printer is advertised under £900 by several suppliers in PCW). Incidentally, CC have written a Postscript compatible interpreter for laser direct so you get Postscript compatibility into the bargain! If all this were not enough, a scanner can be used to turn the whole system into a photocopier by scanning and directly printing the image in under a minute.

DTP comms

Further off is Fax Pack which will enable you to auto-dial a number and send, for example, a complete Impression document to a fax or another computer which could answer the 'phone and file the document on its hard disc in the background while the user carried on with the current task. Imagine Paul distributing Archive by sending it to us by 'phone (with colour graphics)! Unrealistic now, but who knows as the comms revolution marches on? It would certainly save a few trees!

It seems to me that CC's prominence in the word-processing market for BBC B/Master is likely to be eclipsed by their commitment to complete solutions involving both hardware and software for the Archimedes. This is really innovative stuff and complements the machine's innovative heritage. Their main problems are likely to be initial volume production and ironing out teething problems as with Impression. However, I personally feel that this

price is worth paying in order not to have to put up with the boring monotony of the PC world.

Impression Hints

Finally, here are some hints and a comment about Impression from Mike Hobart:

1. **Mailshots.** – Contrary to my initial expectations, Impression can do mailshots – provided that the variable text fits neatly into a (series of) frame(s). The secret is to create the main text (with graphics, etc) on a new master page, with frames for the variable text. Save the document with the master page. Then open a new chapter using the new master page. Separately, prepare plain text files for each of the variable inserts (e.g. name & address, title & name, etc) using Pipedream as a database, !Edit or even Impression. Separate each 'record' with '{nextframe}' '. Load each file to its proper frame. Impression creates a new page based on the master page for each entry. If required, go back to the first page and load any other files to different frames. The memory usage is not too bad: a full page of A4 letter with a fancy letterhead to 825 people occupied about 1.5 Mbytes. It generates 20+ Mbytes of PostScript and takes about 8 hours to print on a Laserwriter NT.

2. **Spooling for PostScript printers** – I sometimes make use of the PostScript printer at work and this involves "printing" to a file. On a single floppy machine, the disk swaps are interminable. The solution is to "print" to the RAM-FS. Allow about 15k plus an allowance for the text (say 4k/page but depends on font and page size) or very much more if the text is fully justified.

3. **Personalising the startup** – I think I have been a bit thick about how to do this, but the penny has dropped – at last. You need to change the !Default document in the Auto directory in !Impress. Start by making sure you have a backup copy! Now open !Default and (via edit) view master pages. Create any new master pages you fancy – including text and graphics – or, for instance, a lowered frame top to allow for the use of headed notepaper. Now create any styles you use frequently and attach them to Ctrl-Shift-fn keys using the panel at the bottom of the style editor box.

I have been using Impression for over six months and have certainly had more different versions than I have steak dinners in the time! I can only say that my initial feelings of satisfaction have been more than amply confirmed. It really is a very satisfying program to use, it very rarely disappoints and I still feel that I have a great deal to learn about its capabilities – which is part of the fun of computing.

More Impression

Finally, some comments and queries from Philip Armstrong about Impression.

Firstly although the program is not bug free, it is quite astonishing in comparison with other programs I have used such as Acorn DTP and First Word Plus. The power of the system became even more apparent after producing a 200 page document with over 20 draw pictures and having automatically created contents list and indexes, all on a A310 with a hard disc. I once produced a one page CV on Acorn DTP and cannot imagine being able to produce much more than that with a 1Mb machine.

Impression also offers great value for money. You get most of the new outline fonts (now selling for lots of money), an excellent DTP book (worth £10), a couple of utilities, a good manual and the DTP program (which includes spelling checker). If you think in terms of buying all these parts separately, you almost get the DTP program free. Sorry Acorn, but the cards are now stacked against your DTP package and any other competitors will have to work very hard. However, I do have quite a few criticisms of Impression but I've sent most directly to Computer Concepts hoping to improve the facilities of later versions.

• **Copying documents** – The first hint is also a warning. If you wish to create a copy of a document and need to work on the new file, be careful. Create the copy then remove the document and them reload the new file. **Do not** change the document in memory then save it as a copy since major deletions have a tendency to change the disc version (especially using delete chapter). This will then leave you with two copies of the new file and the work you have done could be lost forever.

• **Contents lists** – It is possible to create a two type contents page in document, for example, contents and a list of figures. Assuming that the main contents page uses "Main Heading" and "Sub-Heading", create a style "Figures" that is at contents level 9. Also create style "contents9" for the figures layout. Then when all figures have been marked (don't overlay the other contents styles) you can edit and turn off "Main Heading" and "Sub-Heading" as contents styles. Create contents using "figures" as the chapter style, then edit the word Contents (in "Main Heading" style) at the top of the figure list to 'figures'. Then edit style "figures" and turn it off as a contents style and turn "Main Heading" and "Sub-Heading" back on. You can then compile the main contents page and only one entry will appear for the figures page.

• **Saving with <ctrl-F3>** – Be careful when you use <ctrl-F3> to save a document. Make sure the document has a yellow (current text window) heading and border background. The function keys and short CTRL keys only work if this is the case and the document may not be saved or the wrong document saved. Perhaps a confirmation beep would solve this problem.

• There are three useful tables in impression format contained on the monthly program disc. Firstly a list of Impression CTRL keys and the normal VDU meanings. The other two contain a full mode list, and a more refined mode list for standard monitors only. These are similar to those given in the Impression documentation, but include Modes 0 to 28 as well as the extended modes contained in the !newmode module.

• Does anyone know why the CC's Greek fonts take so long to draw and seem to have dozens of entries in the fontlist table. **A**

I added the contributions from Mike Hobart and Philip Armstrong to Ian's compilation, so if I've let anything incorrect through, it's my fault but I'm sure that from Mike & Philip's pedigrees that I'm OK! Ed.



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Benchmark figures vary slightly according to the screen Mode in use; these are for Mode 12. The CPU chip is identical in 20 MHz and 30 MHz versions, but the minimum feature size is 1.5 micron in the 20 MHz chip and 1 micron in the 30 MHz chip.

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First Word Plus Column

Stuart Bell

Epson LQ sheet-feed bug – continued

In April, I reported the official Acorn solution to the problem that various Epson LQ owners had encountered with documents longer than one page. The answer is to edit-out the 'vertical tab to line' entry in the LQ printer driver source. If you need this bug-fix – but aren't too confident about implementing it – then Acorn Customer Services have produced an application note to guide you. You must send an A4 SAE to their Fulbourn Road address (see the Fact-File inside the back cover).

When trying to produce an index of all references in Archive to FWP, I came across the November 1988 issue (2.2). It contains Acorn's solution to the bug with LQ printers and sheet-feeders, i.e. remove the 'vertical tab' entry...

David Crofts had a problem with his LQ-1050 printer which at first seemed related to the 'sheet-feed bug'. He couldn't get high resolution graphics-images to print out correctly and had a form-feed problem. My 'shotgun' approach ('try this, this, or this') failed but in the end Acorn tracked it down to the need for a ROM upgrade in the printer itself. Full details appeared last month in Archive (p.10) so if you get problems with graphics dumps on your LQ-1050 (or other LQ's?), make sure you don't miss it.

Christine Shield has a problem with printing graphics on her Star LC24-10. Can anyone help, please? In other words, has anyone got a fully working printer driver?

Very long pages?

Terry Bennet has produced his own printer driver for a Star Delta DP510 but is left with a couple of problems. The first is that FWP uses a reduced line spacing for graphics and then fails to restore it when going back to text. Thus, his work-around is to reset line spacing on every type change. Is there a better solution, he asks. Also has anyone beaten the lines-per-page limit of 99? I can't see a way round it with two-figure fields being used throughout the page-format window.

1st Mail, issue 2, bug 1?

John Fidler encountered a problem with mail-

merge if a line with multiple key words ended with a key word and that key word represented an empty field. His work-around is to use the key-pad to add a fixed space after the last said key-word. If you've met this problem, that's how to get around it. Thanks, John.

Marginal problems

Following the query raised last month about changing default margin settings for printouts, John Waddell wrote to point out that with FWP1, the alternate-left-margin setting is apparently ignored and most parameters are reset after each document has been printed. This sent me away to test FWP2! Here, alternate-left-margin only works if the 'swap headings' flag (which itself worked with reversed logic on FWP1!) is set. This flag now does work and also when it is set the a-l-m setting doesn't reset itself! Perhaps the work-around is to set the flag even if it's not required. I can see the sense in some values such as 'number of copies' being reset after each document but I still think that there's a bug with alternate-left-margin.

Transfer market?

Dennis Croome wrote asking how to transfer data from Wordwise Plus files on 5.25" discs into FWP files on Archimedes discs. I pointed him in the direction of floppy disc interfaces (to hang a larger drive off his Archimedes), and then PD software to move from DFS to ADFS and from WW+ to FWP file formats.

A couple of days later, with his request for a KXP-1081 driver, Barry Watts mentioned that he hopes to transfer files from his old Amstrad PCW 8512. Two years ago, I left my faithful old Apple II chugging away for hours on end sending all my old files to my new Archimedes at 300 baud down a three-wire serial hook-up. The problem with all such tasks is that we do them once – often at great cost of all-night coffee and loss of hair – and then the experience gained is never used again. I propose to keep an informal list of Archive owners who have managed to transfer files from previous machines and who would be willing either to advise or even to do transfers for people with similar problems.

Obviously, the latter requires that the old equipment is still to hand. I won't publish the list – just refer people who ask for help – but I'll start it: Stuart Bell: Apple II, standard Apple 5.25" discs, Apple DOS or Apple Pascal format, will advise or actually do it (if I can remember how). Offers gratefully received, especially from ex-users of less common machines.

FWP detailed index

I have spent a few hours going through every Archive and listing all references to FWP. It runs to about three pages, so is too long to publish in Archive. If you'd like a copy in soft form, send me a formatted disc (it's quicker and cheaper than photo-copying) with return postage in a Jiffy bag,

with a note asking for the FWP Index. I'll also ask Paul to put it on this month's program disc.

KX-P1081 owners continue to request FWP printer drivers on a daily basis – unfortunately including the subscriber who provided neither postage nor even a return address in his folded brown envelope sent in early May! If that's you, please contact me!

To end with, the usual reminder that I'm at 56 Crescent Drive North, Woodingdean, Brighton BN2 6SN (no phone calls, please) and would be glad to receive hints, problems, wishes and cries for help, KX-P1081 printer drivers or the FWP Index by about the 15th June. **A**

Language Column

David Wild

Editorial

I recently bought a copy of Genesis, which I found to be very interesting. Perhaps a major use for this program could be in the provision of documentation for other programs. The use of the Genesis linking facilities could provide the answer to all the problems of cross-reference that arise in trying to produce instructions suitable for all levels of user.

One of the most interesting discoveries though, was that the program is written in compiled BASIC. So far as the user is concerned, this is certainly as good as anything written in any of the other high-level languages and this reinforces the point that it is the quality of the programming work – rather than the actual language used – which provides the quality of the result.

One of the odd things about computing is that programming seems to be becoming harder, rather than easier, as time goes on. Subsequent releases of existing software slip further behind their delivery dates and large new batches of bugs seem to creep in. I see from a recent edition of Computer Guardian that release 7 of the new operating system is to be at least six months later than promised. dBase 4 as released was late and full of bugs and needed a second version to make it really usable.

I suspect that a large part of the problem is the way that the need for commercial secrecy prevents the discussion of the programming methods used. The

licence agreement for Genesis specifically prohibits the disassembling of the program to see how problems were tackled and, while I can understand Software Solutions needing to prevent piracy, this prevents the rest of us from either learning how the good bits were done or criticising any sloppy work which might have crept in.

When I started as a professional programmer many years ago, things seemed to be very much simpler. This was because most of us were working in-house on specialist software which was often of interest only to our employers and, while our data was certainly confidential, our programming methods could be discussed with anyone who was interested.

We cannot, of course, go back to that situation but I would like to ask for suggestions about raising the standard of programming generally. Is there any way in which we can discuss the techniques of program construction, in any language, without the risk of giving away commercial secrets?

The problems of poor programming standards are not confined to the Archimedes. At work I often have to deal with specially written software for an IBM minicomputer and we find that the first release of a new section is often completely unusable – and it takes perhaps five revisions before we get the results we expected.

The Archimedes has, however, a special need for high standards because of the special operating system. As it cannot run software written for other

machines, except by using an emulator, we can persuade businesses to use it by providing software which is so good that they will buy the machine to run the software. This has happened with the Apple Macintosh – which doesn't yet have such things as outline fonts.

One of the reasons put forward for using languages such as ANSI C and ISO Pascal was that you could write "portable" programs that could be compiled on almost any machine. For a short time this was true and I brought home a program compiled on a Superbrain at work, wrote a "gotoxy" function (which is not part of the standard), added a "mode" statement and it compiled and ran. But, and it is an important but, both machines were using screens of 25 lines by 80 characters. If you were to try and convert dBase 4 for the Archimedes it would

probably be easier to rewrite most of the program rather than trying to convert the source. No doubt many of the functions could be re-used but many of them would need to be totally rewritten to take account of such things as "Wimp_poll" even if they didn't include any graphics themselves.

Large numbers

I was interested to see the reference to handling large integers in the April issue of Archive. All sorts of things can be done in other languages but I would suggest that, if you really need to experiment with very large integers, you have a look at LISP which allows almost infinite precision. It costs rather more than the other languages and seems to be more difficult to learn, but the arithmetic facilities are built-in and could save you the extra cost fairly quickly. **A**

Connectivity

Ian Lynch

As most people know, Acorn's development projects are geared to support both RISC-OS and Unix operating systems with MS-DOS provision via PC-emulation. Acorn are a tiny company compared to IBM, Apple, Dec and the other operating systems and hardware providers and therefore they need to be able to demonstrate that their machines can communicate with the established "big boys" if they are to gain credibility as players in the industrial and commercial markets.

One can hardly pick up a micro magazine, from Byte to PCW, which is not predicting that Unix will be the industry standard of the future and so Acorn need to provide solutions to problems using the Unix operating system on their hardware – currently the R140 and presumably ARM 3 machines in the not too distant future. Further, data compatibility and connectivity between existing RISC-OS networks and Unix provides a way of integrating their own proprietary operating system with that which will be a networking standard in most industrial places.

The key to this is being able to pass data between networks transparently, so that to the user, the environment is unified on his/her screen. Using TCP/IP (Transmission Control Protocol/Internet

Protocol) is the standard way of doing this at a technical level and has been adopted by most corporations needing to link together different computers. TCP/IP dates back to the mid 70's when the American Defence Department had to link a large number of different computers in order to pass information between them. Internet is a system for linking independent networks as if they formed one large network. The networks communicate by sending data packets which have a header which is used to route the packet to the right network address.

Acorn's implementation of TCP/IP is done in conjunction with RISC-OS software so that, to the user, the link into Unix appears to be just another RISC-OS window, but with a black background. Unix in a RISC-OS window is quite an impressive thing to see in itself but the software allows a complete net filing system for Unix using RISC-OS icons. Listing the RISC-OS icons with full information shows the same read/write attributes as by displaying them under Unix with the command `ls -l`.

What is more it would be possible to save and load RISC-OS applications from a Unix server by simply double clicking on them exactly as if they were in a window in the normal desktop. Another useful tool is the ability to mark an area of text in the

Unix window by simply dragging the mouse as with !Edit and saving the data directly into an application running on the RISC-OS desktop.

Let's say we had a database running under Unix which provides a report to the screen. This report could be transferred directly into a DTP window, type-set and printed. In this way an organisation could run a network of Archimedes operating under RISC-OS linked to a network of Unix machines. The networking could be Ethernet, Cheapernet or Econet depending on requirements. There could even be remote text-based terminals in the form of BBC Masters, PC's or dumb terminals connected to the Unix servers via serial leads or Econet and perhaps X-server graphics terminals using X-windows and based around an ARM chip set.

These options provide the flexibility to provide very cost-effective solutions to networking to current industry standards but completely bypassing DOS. I predict that the Intel 86 chips and DOS will become an irrelevance, as processors (not just from Acorn) will soon run PC emulators faster than current 286 machines can run DOS in native mode (remember its only 10 years since the Commodore PET and ZX80). Since DOS has so many limitations, running it on faster and faster processors ends up providing less and less of an improvement and more and more problems trying to get round 640k limits and single task capability. Really powerful and user-friendly applications will run under Unix with links to RISC-OS, SYSTEM 7, OS/2 and DOS (perhaps under emulation). In this way, development will be a lot less hardware dependent and the company which can provide the highest performance at lowest cost and greatest reliability is likely to be the most successful. (Obviously marketing and support are also important here!)

The networking situation is not as clear cut as I may have made it appear. There is much talk at present about open systems and there is a system called OSI (Open System Interconnection) which is likely to take over from TCP/IP as the de facto standard. This is not too disastrous as TCP/IP is likely to be absorbed into OSI since so many people currently use it. For the technically minded here is the OSI structure.

The model is based on a seven layers.

- The application layer (7) provides an information service to support the end-user application process and manages any communication between applications.
- The presentation layer (6) allows the application process to interpret information exchange between applications.
- The session layer (5) establishes communication sessions with other systems when they are needed to support the dialogue between co-operating application processes.
- The transport layer (4) acts as the liaison between the user and the network.
- The network layer (3) maintains establishes and terminates connections, taking care of addressing and routing.
- The data link layer (2) synchronises transmission and handles errors so that data can be transmitted across physical links.
- The physical layer (1) handles any electrical and mechanical interface to the communications media.

As can be seen this is all quite complex but the establishment of open standards is essential if competing IT providers are not to terrorise customers by imposing monopolies or chaos. Other likely standards are for a consistent user interface. Motif is one contender from the Open Software Foundation (OSF). It combines features from Microsoft Presentation Manager, DEC's XUI toolkit and Hewlett-Packard's new wave with 3-D screen buttons (rather like Impression dialogue boxes). Motif is fundamentally based on X-windows which is a Unix standard for graphical communication across networks and supplied with the R140.

Acorn will need to demonstrate their commitment to open standards as they emerge and convince people that their low price high performance technology can take on all comers. I believe it can, certainly at the lower end of the the market, but when Sun and IBM start price cutting (as they surely will) Acorn are in for a tough battle. **A**

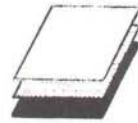
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New Uses for !TinyDirs

John Ansell

The documentation of TinyDirs in the Archimedes User Guide is very brief. I shall describe a number of uses I have found for TinyDirs and give an explanation of how they work.

!RunBas

The first use for !TinyDirs is an application, called !RunBas, that will run a text file as a BASIC program. When you drag a text file into !RunBas on the icon bar the text file is run as if it were a BASIC program.

The !RunBas application can be built, very simply, as follows:

1. First create a directory called !RunBas.
2. Then using !Edit create an obey file called !Run containing the lines:

```
IF "%0" <> "" THEN SET
                        RunBas$File %0
BASIC -quit <RunBas$File>
```

3. Save the !Run file into the !RunBas directory.

The application is now complete – it can be given an icon by creating a !Sprites file containing a sprite called !RunBas using !Paint and saving it into the !RunBas directory.

!RunBas can be installed on the icon bar by dragging it into !TinyDirs on the icon bar. See the Archimedes User Guide for information on !TinyDirs.

How it works

When you drag a file into an application directory held on the icon bar by !TinyDirs, the application is started and the filename is passed to it as a parameter. The first part of the application to be run by RISC-OS is the !Run file. This has the filename available to it as the parameter "%0".

The condition part of the "IF" statement checks for the existence of a filename in "%0". If "%0" is an empty string then no file has been passed to the application and the last file dragged into the icon is run again. If the string is not empty, a filename has been passed to !RunBas. The filename is stored in a system variable RunBas\$File and BASIC is started,

passing it the filename as a parameter. BASIC will accept either a text filetype or a BASIC filetype as input. The "-quit" parameter instructs BASIC to run the file indicated by the filename and quit when the program ends, thus returning control to the desktop.

If you drag a text file into !RunBas on the icon bar, the text file is run by the BASIC interpreter. Double clicking on !RunBas on the icon bar will re-run the last file dragged into it.

Hints on using !RunBas

You can use !Edit to edit a BASIC program as a text file. The text file can be run by dragging it onto !RunBas on the icon bar. Before running the text file, do not forget to save it from !Edit, BASIC programs under development have been known to crash the machine. You can not drag a file from !Edit on to the !RunBas application.

The text file does not need line numbers except when you need them as the destination for a GOTO. (*A what?! Ed.*)

While testing a BASIC program, start each text file with an ON ERROR statement. I use the following:

```
ON ERROR REPORT:PRINT " at ";ERL
                                :END
```

This reports the error type and line number then ends the program.

To find the line that produces the error in !Edit use the 'Goto text line' option and input the error line number divided by 10.

!PrintText

The second use for !TinyDirs is an application that will print a text file without having the RISC-OS printer drivers installed. When you drag a text file into !PrintText on the icon bar, the text file is printed. The text printed includes the full file name, the time and date of printing and full file information as obtained from the INFO command.

!PrintText can be built by the same technique that was used to build !RunBas. The following is the !Run file for !PrintText:

```
IF "%0" = "" THEN Error 0 Drag
                        file onto icon to print
```

```

ECHO <10>=====
=====
{ > printer: }
ECHO FILE NAME: %0<10>PRINTED ON:
<sys$date> <sys$year> AT
<sys$time> { > printer: }
INFO %0 { > printer: }
ECHO <10>=====
=====
{ > printer: }
TYPE %0 { > printer: }
ECHO =====
=====
=====<10>
{ > printer: }

```

!PrintText can be installed on the icon bar by dragging it into !TinyDirs on the icon bar.

!PrintText solves the printing problem that Richard Skemp asked about in the Help section of Archive 3.3 p43.

Installing both !RunBas and !PrintText

!TinyDirs, !RunBas and !PrintText can all be installed on the icon bar by an obey file containing:

```
!TinyDirs !RunBas !PrintText
```

This command installs !TinyDirs and passes it the parameters !RunBas and !PrintText which it will then display on the icon bar. You may have to provide full path names for the applications !TinyDirs, !RunBas and !PrintText to make this obey file work in some cases.

!BasTools

The !BasTools application installs !TinyDirs, !RunBas and !PrintText on the icon bar and hides !TinyDirs from the user. It can be built as follows:

1. Create a directory called !BasTools.
2. Then using !Edit create an obey file called !Run containing the lines:


```
set BasTools$Dir <Obey$Dir>
<Obey$Dir>.!TinyDirs <BasTools$
Dir>.!RunBas <BasTools$Dir>
               .!PrintText
```
3. Save the !Run file into the !BasTools directory.
4. Move directories !TinyDirs, !RunBas and !PrintText into !BasTools.

Double clicking on !BasTools in a directory viewer will install !TinyDirs, !RunBas and !PrintText on the icon bar.

Passing data files to BASIC programs

!TinyDirs can also be used to pass a data file into a BASIC program. The technique described here requires that the BASIC program is made into an application. !BasApp is used as the name of the example application, but it can be given any other name providing it starts with a "!". The !BasApp application can be created as follows:

1. Create a directory called !BasApp.
2. Using !Edit, create an obey file called !Run containing the lines:


```
IF "%0" <> "" THEN SET
                               BasData$File %0
IF "%0" <> "" THEN BASIC -quit
                               <Obey$Dir>.!RunImage
```
3. Save the !Run file into the !BasApp directory.
4. Use !Edit to create a text file of the BASIC program. Use the line:


```
F%=OPENIN("<BasData$File>")
```

 to open the file to be used as input to the program. The variable F% is the file handle.
5. When the program has been input, save it as !RunImage in the !BasApp directory.

!BasApp can be installed on the icon bar by dragging it into !TinyDirs on the icon bar.

To run !BasApp, drag the data file onto it on the icon bar. When the !Run file is executed then a system variable BasData\$File is set to the name of the file dragged into !BasApp on the icon bar. This system variable is used by the BASIC program whenever it needs to open the file.

Finally

Some other applications of TinyDirs that occur to me are a set of applications to run the various compilers available for the Archimedes as very few of these can be run from the desktop environment. But I will leave these for others to impliment. (Any volunteers?) A file Wastebasket can probably be implemented with Tinydirs by a !Run file containing "Delete %0" but I will leave that for others to experiment with. **A**

Designed, & typeset

Impression is more than a word processor. It can handle all aspects of the final printed result - the text, line graphics, photographs, company logos etc. Yet it can still be used to bash out a single page of text as well as any 'simple' word processor. It is a document processor.



entered you do not have to worry about creating new frames or pages.

Graphics frames may contain any sprite (for example images from Scan-Light) or any Draw file. All graphic frames may have the picture scaled within the frame to any degree. In addition the aspect ratio of pictures can be controlled and even locked to any required value.

RISCOS

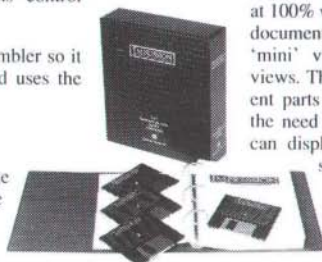
Impression is one of the first products to take full advantage of the new multi-tasking WIMP based operating system for the Archimedes, so it is simple and intuitive to use - long gone are the days when users had to remember commands, or codes for each operation. Only five main menu options control everything within Impression.

The program is written in ARM assembler so it is very fast and very responsive, and uses the minimum possible RAM space.

Frames

Impression is a frame based page layout system. All objects on the page are held within frames which may be positioned freely anywhere on the page. Frames can contain text or graphics, they may overlap, and may be transparent or have any coloured background. They can have a variety of borders displayed around them and may be arranged in columns to create multi-columned text.

Text frames may be linked to other text frames (even on subsequent pages) so text will automatically flow from frame to frame and page to page. Since Impression has been designed primarily as a word processor, it is important that users can enter text unhindered. Therefore frames and pages are created automatically as text flows out of a frame, so that while text is being



Windows

Impression can handle up to 16 documents in memory at any one time, each being viewed in one or more windows. Each individual view may be scaled as required so that, for example, one view may be at 100% while another window shows the same document scaled to 20% so showing a live 'mini' view or multiple page 'thumb-nail' views. This mechanism also allows two different parts of a document to be edited without the need to scroll between them. Impression can display its pages within the window as side-by-side left/right pages, and as vertically arranged pages in a more word processor-like fashion. There is no need to specifically turn over the page, thereby overcoming a limitation of traditional DTP systems.

Spelling checker

Included with Impression is a 60,000 word spelling checker providing some of the most advanced spelling facilities. Check-as-you-type, user dictionaries, ignore dictionary, crossword and anagram solving and an intelligent 'guess' feature are included. Other related dictionaries control automatic abbreviation expansion as you type, and a hyphenation exception dictionary for precise hyphenation control over and above the normal automatic hyphenation.

arranged on

Styles

Like the most powerful word processors on the Mac, Impression supports a system of styles. Rather than having fixed text effects such as bold, underline etc,

Impression allows the user to apply any user named style to any part of the text. This style may be defined and re-defined at

any time to represent any combination of stylistic effects. So for example one style, perhaps called 'heading', may specify text to be in a Times font, one inch high, in italics and centered. This style may then be applied to any region of text with one key-press.

Printing

Included are the latest RISCOS printer drivers for Epson compatible 9 and 24 pin printers, and LaserJet compatible laser, ink-jet, and PostScript printers. These printer drivers ensure the output is to the maximum resolution the printer can manage. Impression also supports 'text mode' draft printing so text may be output as fast as possible using the printer's character set. The user therefore has a choice between fast, text only printing or high quality text (any font, any size) and graphics printing.

Impression comes with a 'no quibble' money back guarantee when purchased direct from Computer Concepts.

This advert was designed, entered, laid out and edited on Impression. All logos were created in Draw and imported into Impression frames. The pages were then 'printed' via the PostScript printer drivers to disc. This disc file was then sent directly to a Linotron photo-typesetter, which output the final camera ready artwork. The studio photographs were then pasted over scanned versions.



Other features:

- Master pages for consistent document design.
- All measurements may be specified in inches, mm, cm, points, picas, all to an accuracy of 1/72000ths inch.
- Ideal for a 1Mbyte machine - over 300K free memory!
- Fast automatic disc spooling of documents larger than memory, allowing virtually unlimited document size.
- Print multiple pages per sheet, any scale and rotated.
- Includes Acorn's new outline font system and fonts.
- Fast graphic scale and PostScript graphics printing.
- Automatic index generation.
- The package includes a 200 page manual (produced entirely with Impression), with tutorial, introduction and reference sections. Four discs include Impression, the printer drivers, the outline font manager and fonts, example document, Line-art examples, utility programs etc. An independently produced guide book to typography and page design is also included.

£149.00 +VAT (£171.35 inc)

A more detailed brochure is available from:



Computer Concepts Ltd

Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. (0442) 63933

Help!!!

• **(Contract) bridge program** for the Archimedes. Does anyone know of one? Even one that works under the PC emulator would do. Chris Pearson, Cambridge.

• **A PostScript reader for !Draw?** Does anyone know of one? I often feel that postscript would be a good interim document exchange format because:
– it is capable of combining both text and graphics
– the text of the document is held in ASCII within the PostScript file and so should be readily extractable for access by a text processor

– it uses ASCII and so should be compatible with even the most primitive electronic communication mechanisms

– it is directly printable on a postscript compatible printer and so even simple terminals can be used to receive it as electronic mail and then print it

– it is widely available as an output format from many types of information handling systems. Dave Smith, Nottingham.

• **PCW File Transfer.** How can I (simply) transfer files from my humble PCW8512 to First Word Plus on the Archimedes? Barry Watts, Hendon.

• **HP DeskJet Plus printer.** I'm thinking of upgrading to an HP DeskJet Plus printer with Impression. Can some kind person send me a typical page (with large & small text & graphics) produced with this combination please, so I can see what I'll get? Any comments also appreciated. Postage gladly refunded. Stuart Bell – address in FWPlus column.

• **My Epson LX-80** only seems to want to know about 11" or 12" paper and not the 11.5" paper that I have. How can I set up !PrinterDM to skip the perforations, and at the correct place, on my continuous stationery? Dave Smith, Nottingham

• **OCR.** With the advent of cheap hand scanners, does anyone know of any work to get compatible Optical Character Reader (OCR) software onto the Archimedes so that scanned documents can be turned into text files? Dave Smith, Nottingham. **A**

SCSI Column

Paul Beverley

Lingenuity assure us that all the earlier problems are now over. They have stocks of all their drives and podules so I have now put them back on the price list. The problems that have occurred with incompatibility with other hardware and software products have now been solved. In particular, they are now compatible with ARM3. The current version of the podule software is 1.37.

Faster 40M drives

Lingenuity's 40M drives are now a higher spec than before – the access speed is 28ms instead of 40ms and the data transfer rate is around 600 kbytes/sec – nearly as fast as the Oak 45 Mbyte drives (660 kbytes/sec). Lingenuity have also run the "A Fairer Test" from Archive 3.6 p 26 and found that their new drives give timings of 9.6s and 37.9s for tests (1) and (2) compared with Oak's 45M at 10.1s and 37.6s, i.e. 5% and 1% faster respectively. We have not yet tried one of these drives to be able verify this.

Optical drive – twice as big, twice as fast!

Lingenuity now also have a 972 Mbyte optical drive (486 M per side) to rival Oak's 560M drive. Well, it's not quite twice as big but it is about twice as fast! It does 205 kbyte/sec on write and 632 kbyte/sec on read (roughly twice the speed of Oak's drive). The price though is only slightly more – the r.r.p. is £5500 +VAT (£5945 through Archive) compared with £4800 +VAT for the Oak one. The cartridges cost the same, i.e. £300 +VAT each. Lingenuity will supply the same unit as Oak but for £3750 (£4055 through Archive).

Oak Podules with Mac drives

Finally, some comments and a help plea from Mike Hobart in Cambridge: My lab upgraded our A310 by adding an Oak SCSI drive recently. It was the easiest job (except that a magnetic screwdriver would be an advantage) and works fine. We have a number of Macs and bought two removable hard disk drives for them to allow us to generate very

large databases. Since these are also SCSI, we rigged up a connecting cable with Oak's helpful and responsive advice and it works beautifully on the Archimedes as SCSI drive 5 providing easy backup and potential for massive data storage. Presumably most mass storage devices compatible with the SCSI-FS would also work on both machines (Oak, of course, sell "proper" Archimedes devices). The disk format is naturally not Mac compatible.

Does anyone fancy writing a Mac-FS so that we can directly read Mac data via the SCSI interface? Or even – dare I breathe it – a Mac emulator which would provide a "Mac" screen in a window, 68000 emulator and a remapping of the Mac WIMP system onto RISC-OS. The best Archimedes applications are better than competitive with those on the Mac but the diversity of Mac and PC applications is likely always to be greater than Archimedes-native applications, and some would be nice to use. **A**

Competition Corner

Colin Singleton

My apologies if you are still struggling with last month's search for perfection. Keep at it, you can still win the prize. But now for something completely different...

Playing with words

You have seen those Word Square puzzles in magazines which are supposed to while away the hours on British Rail's trains? A square grid is filled with letters in which a number of words, usually with a common theme, are hidden. The words may run horizontally, vertically or diagonally and may read in either direction.

I wouldn't insult you by asking you to solve one of these. You have to write a program to **create** the puzzle. The program should read a list of words (from DATA statements or a text file) and 'hide' as many as possible in a square of a given size.

The competition

For this competition I want a 20x20 word square containing as many as possible of the 58 cities of the United Kingdom. Where the name comprises more than one word, please use the full name, concatenated to one 'word'. So, for example, Stoke on Trent becomes STOKENTRENT or, of course, TNERTNOEKOTS!

The puzzle must be solved by the program, without any final 'juggling' by the programmer! Please send your grid and a list of the cities which are **not** included, either via Paul at NCS or to me at 41 St Quentin Drive, Sheffield S17 4PN. I would like to know how long your program took to do the job, but the main criterion in judging the winner will be the total length of the names left out.

Here is the list (use upper case in the word square)

Aberdeen Bangor Bath Belfast Birmingham Bradford Bristol Cambridge Canterbury Cardiff Carlisle Chester Chichester Coventry Derby Dundee Durham Edinburgh Elgin Ely Exeter Glasgow Gloucester Hereford Kingston upon Hull Lancaster Leeds Leicester Lichfield Lincoln Liverpool London Londonderry Manchester Newcastle upon Tyne Norwich Nottingham Oxford Perth Peterborough Plymouth Portsmouth Ripon Rochester St Albans Salford Salisbury Sheffield Southampton Stoke on Trent Swansea Truro Wakefield Wells Westminster Winchester Worcester York.

(It appears that St Albans, rather than Saint Albans, is correct. Do we have any readers there, apart from a certain rival publication?)

Past competitions

I can now announce the winner of the February competition (30 dice in a tower). The only competitor to complete all three stages of the problem was Hans Kommeren of Breda, Netherlands, who also won the sloping ladders competition last year. Two cheers though to Graham Jones of Durness (those of you south of Watford get your maps out!) who solved the first two parts without using his machine.

There has been no interest in the squares and cubes jigsaws (January and March), so these competitions are now closed. However, if anyone does feel inspired to tackle them at any time, I would be interested to see the results.

There certainly has been interest in the Easter puzzle and I am now writing to the contestants for further details. **A**

Using Studio 24 Plus

Stewart Watson

Normally, when you are using a sequencer like Studio 24 your aim is to end up with a complete piece of music, ready to be stored and brought out later to dazzle your friends and neighbours. It is very easy to waste a lot of time at the start of a music session for a variety of reasons, the most common of which is the lack of a clear idea of how you are going to go about achieving your objective.

Here are some tips which may help you save time – most have been picked up from bitter experience.

Ready made voice patterns

Before you start work trying to put together a whole piece, it is well worth preparing some utilities which, though time consuming, will save you many hours in the longer term.

Make up a dummy pattern with all your voices allocated to the tracks and Midi channels you are going to use most often. Save this as a pattern named Dummy or some other suitable filename then, instead of starting from scratch each session, you can load this default pattern.

Rhythm patterns

Another time-saver is to record some rhythm patterns and save these onto the clipboard one after another, then save the clipboard. Remember, you can have 24 different things on the clipboard. These you can then load again as a clipboard file and use as required. Among the most useful patterns are: 8 beat, swing, 16 beat, disco, shuffle, waltz, jazz waltz, march, etc plus a couple of examples of count-ins. I use two count-ins: one is one bar long for tunes which begin on the first beat of the bar and the other two bars long for tunes with upbeats.

Now we can get started

When you are ready to start a whole piece, start by loading in your clipboard of rhythm patterns, count-ins and 8 bar patterns in various styles. Once these are loaded in, lay down a basic rhythm track as this is much easier to play along with rather than playing along to the metronome.

Choose the track on which you want your rhythm patterns to be recorded and played. Then select the

appropriate count-in from the clipboard and go to the copy icon and insert this at bar 1. It is a good idea, if using Midi instruments, to match your track numbers to Midi channel numbers as this makes things easier to remember. (My drum machine sends and receives on Midi channel 15, so I record all my rhythm patterns on track 15).

Next, choose a suitable basic rhythm from the clipboard to run through your whole piece and insert this repeatedly into the same track starting at bar 2 or 3 (depending upon the length of your intro). Use repeat copy to do this as you can just click on insert as often as you wish without having to reopen the copy window each time. It doesn't matter if you insert it too often, as you can cut the end off the track later if you don't wish to re-program the rhythm part.

Using internal voices

If you intend to use internal voices, copy all the voices you wish to use into one directory. Assign each voice to the required location and save them all as a voice set. As there are 16 Midi channels, it makes sense to use tracks 17-24 exclusively for internal voices. Once again, if you use the same tracks for the same voices it makes editing much easier when you come back to a piece at a later date.

The use you make of internal voices will depend upon whether you are using them alone or in a mix with Midi voices. If you are using them on their own, you will probably want to arrange them so that you have a lead part, a rhythm part, a bass part and a percussion part. As you have only 8 voices to do all this, here are some suggestions for saving voices.

When playing the chord part, instead of block chording (playing all the notes at once) play the chords as arpeggios (the notes are played one after another in a pattern).

If you are using a Hi-Hat in your rhythm part instead of using both open and closed Hi-Hats, use open only but use it at 2 different volumes to fake the open and closed effect.

You should now have the something like the following voices available:

- 1) Lead part – 1 voice
- 2) Chord part – 1 voice
- 3) Bass part – 1 voice
- 4) Rhythm part – 3 voices

This arrangement leaves two voices free to be used for any extra parts you wish to add:

- 1) Doubling up the melody for a thicker sound – possibly using track offset to add echo
- 2) Adding a counter melody
- 3) Adding a second arpeggio chord pattern in the accompaniment
- 4) Adding extra percussion etc

If, on the other hand, you are using internal voices along with synthesizer voices, you will probably wish to use internal voices in a different way, to add special effects, perhaps.

Whichever way you are going to use the internal voices, it is best to load all those you are liable to use

as one voice set at the start, altering the memory allocation for internal sounds if necessary, as you can then switch between voices as required without having to reload another voice set.

If you follow the above instructions when you start a sequencing session, then after loading Studio 24:

- 1) Load a Clipboard of rhythm patterns
- 2) Load a Voiceset of internal voices
- 3) Load a Pattern with voices and Midi channels already set

You should now be able to make a flying start and make best use of your creative urges before inspiration flies out the window.

Stuart Watson is happy to produce a music column for us, so direct your questions and/or hints and tips to him either through the Archive office or direct to him at 1 Mill Road, Thurso, Caithness, KW14 8PT. (No phone calls, please.) **A**

CraftShop 1 & 2

Steve Bruntlett

As part of their drive to produce software specifically for the Archimedes, 4mation Educational Resources have followed their first Archimedes offering, Jigsaw, with two packs each containing two different art/graphics programs. Craftshop 1 contains Patterns and Stitching, Craftshop 2 contains Embroidery and Tiling. The packs comprise a card wallet, registration card, program disc and an excellent manual produced using Impression. The manual deals comprehensively with the use of the programs in terms of making working copies, initialisation and printing.

Knowing that 4mation have a strong reputation for good educational programs, I was a bit worried when I started to look at the packages. The title of the packs seems to give the game away – Craftshop. What we have before us are the electronic equivalents of Quilling, String Art, Embroidery and Pattern-making, the kind of thing I remember doing on wet afternoons at primary school. Not wanting to jump to any conclusions at such an early stage, I decided to look at each program separately and see what it has to offer.

Craftshop 1

Patterns involves using combinations of up to 20

pre-determined shapes from a menu in up to 16 outline or solid colours to produce complex images. Shapes can be enlarged or reduced and can also be rotated. Shapes can also be moved in front of or behind other shapes. Groups of shapes may be repeated or reflected as may individual shapes. The resulting image can be edited at any stage.

The palette can be altered to include any 16 colours from the 4,096 available on a 16x16 grid. The method of selection seems to be a good way of choosing colours but it's a bit hit and miss. Having said that, I can't think of a better way of doing it than using sliders to control the red, blue and green components of colours. Palettes can be grabbed from other designs to experiment with colour combinations. The whole program is very intuitive and a joy to use. The demonstration pictures supplied on the disc show the power of the program. I look forward to seeing the program in use by pupils in schools.

Stitching is the kind of thing which you would expect computers to be ideally suited for and, judging by this program, they are. You may have doubts about the educational value of string art but you look at some of the examples in the manual, but wait until you see the demos on the Stitching disc.

The strung sections can be created stitch by stitch or be selected from 20 sample designs. There is also a stitch pattern generator which will keep you occupied for a long time investigating possibilities.

Having created the patterns, you can animate them. Not only can you animate the whole pictures but you can also animate individual elements within the pictures. This is very impressive, especially when you use different colours and different animation speeds, but what is really impressive is the single demonstration image on the program disc which is animated in 3D.

Instead of the complex stitched designs just rotating on the screen, they rotate while themselves spinning around a variable axis which moves in and out of the screen. This is extremely difficult to describe and has to be seen on screen to be believed. I think that this kind of manipulation in 3D would be difficult for young children to achieve but as the whole image is again editable, they could take it stage by stage. I found this a challenging and stimulating program to work with but you can only see its best effects on a monitor. Printouts do the program no justice at all.

The two programs in the Craftshop 1 package will give Junior school children, as well as many adults (myself included!), plenty of opportunity for experimentation and exploration in the production of complex and beautiful geometry based art work.

Craftshop 2

Embroidery allows you to design a wide variety of embroidered designs using the 23 existing stitch patterns or by designing your own. Stitch patterns are built up in blocks using a comprehensive but sometimes awkward to use pattern display. There is a palette of 64 colours providing 4 shades for each stitch colour to give a more realistic 3D effect when put together in a pattern.

The idea of the program is to design stitch pattern blocks which can be combined to produce a overall pattern or more intricate patchwork design as illustrated in the examples of work on disc. This is done by using the existing stitches or your own user defined stitches from the stitch bank and placing them on the screen. User defined stitches can be saved on disc for future use in different pieces of

work. Stitches and stitch patterns can be edited, flipped and copied. There are facilities for colour matching and colour changing on local or global basis. The whole program is a bit time consuming and a bit laborious but the results are often very rich. There are definite possibilities here for interesting and rewarding work if children have the patience necessary to complete a piece of work.

Tiling has not received much of my time but essentially the program allows you to work with a wide range of tiling patterns to produce complex tiled images from your own sprites produced with other packages, or from your own sprites produced with !Paint or with examples supplied on the program disc. There are comprehensive instructions for using !Paint to produce tiled designs as well as RISC-OS printing and filing procedures.

You can either work on straightforward square or rectangular tiling or the more complicated but more rewarding methods of tessellations. To this end, you can edit the tile patterns to interlock as well as working with any of 41 tile patterns in each of three styles. Style 1 has a single tile, style 2 a pair of tiles and style 3 has four tiles. Once your tile pattern has been prepared, its palette can be changed. Tiling has great potential from enabling the preparation of simple square based tiling patterns for beginners to offering potential for more advanced users to produce complex patterns exploring the range of tile patterns in the more complex styles.

Overall

The use of all these programs is explained in the context of the RISC-OS environment and full details are provided of filing and printing out work using the range of Acorn printer drivers. Both these packages are very well documented and are excellent value for money. They offer electronic equivalents of a range of traditional school activities which can be explored much more effectively using a computer while encouraging pupils to have a closer look at the real thing.

Craftshop 1 & 2 are published by 4mation Educational Resources and cost £29.00 + VAT per pack. 4mation also offer a demonstration disc if you send them an SAE and a blank disc. **A**

DataStore's !FontFX

Simon Burrows

!FontFX is a fully multi-tasking RISC-OS utility for creating unusual effects with outline fonts. It enables text in an outline font to be converted into 'paths' (images made up of lines, curves, etc as produced by !Draw) and then be saved as a drawfile which can be loaded into !Draw, where it can be rotated, cropped, enlarged, etc using any of the facilities provided by !Draw to manipulate paths. (These same facilities unfortunately cannot be used with text that has been typed straight into !Draw.) These drawfiles containing manipulated text can then simply be dropped into any package that can handle drawfiles, such as Impression, Acorn DTP, Tempest, Ovation or PipeDream3.

Those of you who use Impression may well be asking how !FontFX is different from the !FontDraw utility supplied with Impression or the !FontEd utility (available on SID or Careware disc 7) which enable you to do everything that I have mentioned so far (although !FontDraw is superior to !FontEd for this purpose). The difference is that !FontFX enables you to manipulate the text in ways which would be tricky to do with !Draw and impossible with !FontDraw/!FontEd – before saving it as a drawfile. These features include giving the text an outline border in a different colour, wrapping text around circles, giving the characters a shadow behind them, creating wavy text, slanting and sloped text, amongst other features described later.

Packaging and documentation

!FontFX, produced by The Data Store and available through Archive for £10, is supplied on a single disc, with a sheet of changes and bug fixes in the latest version (3.13). The instructions on the disc are in the form of a text file which can easily be printed out, and are comprehensive and easy to understand although generally unnecessary. It is an easy and straight-forward utility to use and, if there are any features that you do not understand, help is instantly available using the interactive help utility !Help supplied on the Acorn Applications Disc 1. (I hope that more authors will include this facility in their applications software in future!)

Demonstration files

On the disc, there is the !FontFX application, and several !Draw files demonstrating some effects which can be obtained. (*The demo files are included on this month's magazine disc courtesy of The Data Store. Ed.*) The filer must have seen the !Fonts folder before loading !FontFX, which loads immediately on a hard disc system but which requires several disc swaps on a single floppy system in order to load !FontFX and cache certain fonts. Clicking on the !FontFX icon on the icon bar opens a single, large window from which all of the facilities are available.

A writable icon allows you to type in the text that you want to manipulate (maximum 47 characters) and you can select this to be in any outline font that you have lying around. The colour of the text can be altered (as can its size) and an outline border for the text can be selected, of variable colour and thickness. A shadow can easily be created behind the text, of variable colour, simply by clicking on the 'Shadow' icon, and the shadow can either be a 'floor' or a 'wall' shadow, indicating where the shadow appears to fall.

Interesting effects

All of the above actions can be done to text, which can either be left as normal text in a straight line or else can be manipulated in one of the following ways. Instead of being in a straight line, the text can be put into a vertical column, or else the base line of the text can be altered regularly to create a rippling effect in the text or it can be altered at random creating 'jiggled' text.

Alternatively, the text can be wrapped around the outside of an imaginary circle, clockwise, anti-clockwise, or both (difficult to explain!) and the spaces between the words can be converted into dots (quite effective). If you wish, a simple shape can automatically be included in the middle of this circle, the choice being between a circle, square, diamond or star. The text can be spread along an arc of variable curvature or it can be rotated, sloped or leant by any angle (these have different effects on the base line of the text – tricky to describe!).

!FontFX now features a command language with which script files can be created in !Edit and which, when dragged into !FontFX, cause a drawing to be created automatically. Previous versions of !FontFX did not have this and also had trouble with Outline Fonts from some suppliers (e.g. Electronic Font Foundry). According to The Data Store this problem has now been fixed. Certain start-up defaults can also be altered and saved.

These are basically all of the facilities offered by !FontFX although, of course, if you require any others they can be obtained (with difficulty) using

!Draw on a file produced by !FontFX. To create the !Draw file in !FontFX when you are ready, the 'Create drawfile' icon must be clicked on, producing a standard 'Save' dialogue box. One useful feature here is that if you do not type in a full pathname and click on 'OK', the file will be loaded directly into !Draw if it is available.

Overall, I would recommend !FontFX to anyone who uses DTP, since some very effective results can be obtained, which look very professional on finished documents. At only £10, it is a worthwhile addition to any applications library. **A**

PipeLine

Gerald Fitton

Last month I said that I do not know whether PipeDream overrides the *Status setting of No Ignore by using VDU 1. In fact, Colton prefix all characters which have to go to the printer with VDU 1 (this is the method recommended to all application writers): this means that it does not matter what you have as your *Configure Ignore <Character> (because VDU 1 forces the 'ignored' character to be sent), nor does PipeDream use a *FX 3 call (which can be used to redirect the VDU stream of characters to a printer).

Using PipeDream's own printer drivers, you have the choice of sending line feeds (LF) or not. Make your choice by studying the setting of the dip switches on your printer. If your printer uses <CR> to execute only a carriage return and does not generate its own line feed, you must send <LF> from PipeDream. If you are getting no line feeds, you do need line feeds from PipeDream and your printer will not insert them.

The complementary problem is getting double line feeds. This is when the PipeDream printer driver is set to send a <LF> (and so it does) but the dip switches in the printer have been set so that <CR> executes both a carriage return and a line feed so you get two line feeds in all. Badly written graphics printer dumps sometimes give double line feeds or no line feeds at all for the same reasons (I wrote a bad one once so I know the problem).

I also said "One more point is that the 'Save' menu has a 'Line Separator' option. My understanding is

that this only affects the way a file is saved to disc". Colton confirm that this is true – it does not affect printing.

Justifying hard space

A hard space is one which does not get split across lines – but it can also be used for overcoming layout problems which arise when using proportionally spaced fonts. The simplest way of entering a hard space from the keyboard is by holding down <Alt> and pressing the space bar. When you justify your text, all the soft spaces across the line grow larger and you may not want this. Hard spaces do not grow in this way and so they should be used where you want a fixed size space. If you are using the proportional fonts Trinity or Homerton, all numbers are the same width (numbers are the width of an 'en' dash – which, in turn is half an 'em' dash); the size of the fixed space is half the width of a number (i.e. half an 'en' dash). Hence, if you are tabulating numbers, it is a good idea to use the hard space to maintain the alignment. If you are using a PipeDream printer driver, you can use the printer driver translation table to convert a visible character that you don't want printed (such as an 'en' dash) into a space.

Inserting fonts

If you click on the font width with <select> button, the font will not be inserted. This is not a bug but don't do it! If you want to insert a font with a width or height (or both) different from the default (called 'Printer font'), click on the width with <adjust> (so leaving all the menus on screen), click <select> on

the height (or font name). If you want a new font but at the same size as your default ('Printer font'), click <select> on the font name itself.

Options with spreadsheets and databases

Turn off 'Wrap' and turn off 'Insert on Return' (so that there is a blank space rather than a blue star in the options box). These options will be found in the Files - Options menu or by using <Ctrl>+O.

Obscure & Intermittent problems

Rather than fill up PipeLine with these I have decided to offer the following service for obscure problems which some users get intermittently. If you have any of the following problems, write to me because I have a 'sort of' answer. 'Obscures' this month are: • crash on using 'Lock user dictionary', • crash using long (spreadsheet) expressions, • <Esc> does not stop printing, • failure to save a small file to disc when the disc space is small (but much bigger than the file), • block operations (e.g. 'sort') hang up, • saving printer drivers (with <LF> only) doesn't work, • lost print at the right hand edge of the screen (but shown correctly on screen), • lost user dictionaries with 'Tidy up', • unwanted form feed with Qume and !PrinterLJ.

The Psychic User Interface (PUI)

Formatting multi-column text gives many users many problems. A typical problem is a perverse unwanted text movement (usually off the bottom of the screen) when 'Delete Row in Column' is used or a mysterious desire on the part of beautifully formatted text to turn into a single paragraph when all you wanted to do was reformat a few lines. I am told on good authority that Colton are working on this problem and will be adding - as a mouse upgrade - a PUI. The PUI mouse has an infra-red sensor which detects small changes in the surface temperature of the user. When his or her temperature rises because of an unwanted occurrence such as an unwanted total reformat, an 'undo' subroutine is called automatically. The beta-test version also makes a quick Save to disc (under a backup name) after 'undo' and then (silently and invisibly - i.e. off screen) offers the user the option of continuing (i.e. undoing the undo). If the user temperature falls this is treated as a 'No' but the PUI can reconfigure itself to invert (i.e. reverse) this option if it receives too many consecutive contra-indications.

By the way, before you write to Colton for an advance copy of this add-on you should be aware that the full (production) version will not be released until 1st April 1991.

Contributions to the 'Choosing options & when not to format' discussion will be welcome.

Deleting & moving many rows

Following on from the above, a more practical way of deleting or moving many rows without the risk of missing a column is to hold down <select> and 'drag' down the left hand side (where the row numbers are) to mark the rows you want to delete or move. This guarantees that you will mark all the columns. Of course, if you want to select only a few columns to move or delete, you may have to do the operations piecemeal or, alternatively, wait for the PUI to be released next April.

Insert on wrap

If you use <Ctrl>+O and then select 'Row' for your 'Insert on wrap' option then, when writing in the second (or third, etc) column of a multi column layout, your first column will move down leaving an unwanted gap when you get to the right hand end of the second column. Whilst this problem will cause only temporary inconvenience when the PUI becomes available, in the meantime you will find that switching 'Insert on Wrap' to 'Column' when working on a multi column textual layout may keep you happy.

Today's date

Define a function key, e.g. <Ctrl>+<Shift>+<F1>, with Cdfli "Ctrl-Shift F1" li "@D@Q\lm\Zlm\BSS lm" lm or use <Ctrl>+CDF and type @D@Q\lm\Zlm\BSS\m into the dialogue box. This will enter today's date (as a variable so that if you look again tomorrow it will have changed), clear any markers (\Q), mark the block with today's date in it (\Z) and then 'Snapshot' the date (\BSS) so that tomorrow it will still show the (correct) old date.

Anagrams

I have been offered both 'LEAST' and 'BEAST' as seven letter anagrams by Stephen Gaynor but no eight letter anagrams and no subgrams. If you can do better than eight anagrams (i.e. nine or more including the original word), send your word to: Robert Macmillan at Colton Software quoting your

PipeDream registration number – you will win a prize from them.

PipeDream DTP

I had hoped to include much more on this subject this month but space is short so I've decided to leave it until next month.

PipeDream as a Relational Database

Some of you familiar with, say, dBase may cringe a little at some of the non-standard terms which I am going to use but remember that this is intended for PipeDream users so I want to use terms that they will understand. I am indebted to Keith Matthews for the idea. His letter to me, describing in detail how he uses the relational database feature of PipeDream, is available on the monthly program disc. The example I have used might have mistakes in it: Keith's is more complicated but he uses it regularly to generate names and addresses from a reference typed into one slot of a letter. His relational database uses three cross referenced files (plus the letter he is writing) and he has used it to send me the letter which is on the disc. My example is simpler to explain because it uses only two cross referenced files plus a letter.

Concepts

Databases contain similar information about many similar things. For example, you could have a database containing information about your compact discs or another with information about your friends' names, addresses and telephone numbers. A simple database consists of a single file. That one file contains all the information you have about those things, i.e. one file for 'Compact Discs' and another file for 'Friends'.

The file consists of a number of 'records' – one record per item. For example, you would have one record for each friend. Using PipeDream (and not using the multi-row record facility) all the information you want to store about a single person would be found in one row – so the information about Fred Bloggs would all be found in, say, row 13.

Each record consists of many 'fields'. Each field is a particular piece of information, for example 'Bloggs' would be in the field called 'Surname' and

you would use a different field for telephone number. Using PipeDream, one column is used for each field. You could put everybody's surname in the first field, column A, and everybody's telephone number in the tenth field, column J.

It is important that you do not mix the fields up. For example, if one address is shorter than another, perhaps because you don't know a person's post-code, then the missing field must be left blank. Do not move the telephone number into the 9th field.

Such a file can be sorted on any field (e.g. to group together everybody with an 01-200 telephone number) and then you can do operations on a marked block (e.g. search and replace the 01 with 081) finally putting the file back into alphabetical order of surname. You can use mail merge techniques to print out labels or customised mail shots. (Dear Fred – Out of all the people in Any Street, Yourtown, you, Mr Bloggs, have been specially selected for our super duper prize draw... now just buy one of our new-fangled whatsits).

Make it relational

One use for a database might be for a club which loans out specialist DIY tools to its members. You could have the tool in the first field (column A) and the club member's membership number in another field followed by date of loan, hire charges, etc in other fields. You may want to send a reminder to a member that a tool has not been returned. Alternatively, you may want to send a similar customised letter to all members who have been tardy at returning their borrowed tools. You may think you must either store the full name and address of the member in the 'Tools' file (for every tool they borrow!) or look up their name and address against their membership number (manually) in a second 'Members' file. Well, not if you have a Relational database.

A database is relational if you can pick up 'cross referenced' data automatically from one file to another. In the example above, you want your form letter exercise to pick up that the tool should have been returned but hasn't (that's the easy bit – search or sort the 'Tool' file) and then, using the name of the hirer from the 'Tools' file, look up their address in the 'Members' file (i.e. get the 'cross reference') and print the address in the form letter in the slots reserved for it.

Using the 'Dependent Documents' facility of PipeDream 3 you can, with some thought and care, use it as a relational database. The figure below shows part of a screen containing three PipeDream files which together make up the simplest of relational databases. At the top left is the file called 'Tools', at the top right one called 'Members' and the bottom window contains the file 'Letter'.

This simple 'Tools' file consists of three columns containing: column A, the tool borrowed, column B, the tool club member's membership number and column C, the date when the tool is due for return. The date, 10 Jun 90, is entered by using 'Edit Expression' and typing in 10.5.90. There are no cross references in the 'Tools' file.

The 'Members' file, as shown here, also contains three columns: column A, the member's membership number, column B, their Surname and column C, their Forenames. Of course, you could extend this to include their address and the date on which their subscription is due, etc. Again, there are no

cross references but, when you lend a tool out, you must be sure that you enter the member's number in the 'Tools' file. Although 'Tools' and 'Members' have the members in the same order, this is just coincidence – you can sort the files independently into any order (date, tool, surname, etc) by any field and the relational database will still work.

Now for the cross reference

It is in the 'Letter' file that all the cross references occur. The entry in [Letter]B2 has to be typed in by the letter writer. It can contain the tool name, Drill06 or (in my view better) [Tools]A5. Slots [Letter]A2 to [Letter]A6 are typed in in the usual way but [Letter]B2 to [Letter]B6 contain the cross references. One of the more complex ones [Letter]B5 (with a double cross reference) is shown in the screen dump. [Letter]B3 contains the formula vlookup(B2,[Tools]A5A8,2), [Letter]B4 contains vlookup(B2,[Tools]A5A8,1), [Letter]B6 contains the complex formula vlookup(vlookup(B2,[Tools]A5A8,1),[Members]A5A8,2).

PipeDream: adfs::DataBase\$.Tools			PipeDream: adfs::DataBase\$.Members		
A6	↓A.....B.....C		A7	↓A.....B.....C	
1	Tool	Membership	1	Membership	Surname
2	Number	Number	2	Number	Forenames
3			3		
4			4		
5	Drill06	FB32	5	FB32	Bloggs
6	Drill13	JS29	6	JS29	Soap
7	Drill24	GF13	7	GF13	Fitton
8	Socket123	GF13	8		Gerald
PipeDream: adfs::DataBase\$.Letter					
B5	vlookup(vlookup(B2,[Tools]A5A8,1),[Members]A5A8,1)				
	↓A.....B.....C				
1	Tool Reference	Drill06			
2	Due for Return	10 Jun 90			
3	Membership Number	FB32			
4	Surname	Bloggs			
5	Forenames	Fred			
6					
7	Dear Fred Bloggs				
8					
9					
10	Our records show that the tool Drill06 should have been returned by				
11	10 Jun 90				

The effect of all this is that column [Tools]A is searched for the tool shown in [Letter]B2. When it is found, the member's number (in the same row as the tool but in the column [Tools]B) and the due date, from the column [Tools]C, are entered into [Letter]B4 and [Letter]B3 respectively. [Letter]B5 and [Letter]B6 carry out a similar lookup for the member's number but, having found it, that number is matched in the [Members]A column and the values of the Surname and Forenames from the [Members]B and [Members]C columns are transferred to the [Letter]B5 and [Letter]B6 slots.

Once you have written the letter, the next letter can be generated automatically by changing the content of slot [Letter]B2 from [Tools]A5 to [Tools]A6. All the cross references such as members' number, name, etc will automatically appear in the slots [Letter]B3 to [Letter]B6. Of course, if you have an address for the member in other columns of the 'Members' file, these can be automatically transferred in the same way.

The letter itself can contain references to the slots [Letter]B2 to [Letter]B6. As an example, the letter which starts in [Letter]A8 contains: "Dear @B6@ @B5@" so that "Fred Bloggs" gets transferred automatically from the slots B6 and B5 into the space after the word "Dear". The slot A10 contains: "Our records show that the tool @B2@@@@" should have been returned by @B3@@@@" ". The effect of the @ signs immediately before and after the B6 and B5 is to transfer the data from B2 and B3 into the body of the letter. You should put in a few extra @ signs (in this case an extra three) so that you can guarantee that the line will format correctly. You can use 'Format paragraph' in the usual way on the bodytext of the letter.

A nice touch (not shown here for clarity) is to keep the slots [Letter]B2 to [Letter]B6 off screen – say in slots D2 to D6 – and reduce the width of column D to zero before printing. There are other ways of achieving the same effect such as printing a marked block or a range of columns but you may want the references printed any way.

I would like to know if it is possible to do something similar with Minerva's new relational database, (*Do you mean MultiStore or the really new one, FlexiFile? Ed.*) – and if so how much easier is it to

do this kind of exercise with Minerva's software? Please send me your comments – not necessarily for publication – but for my own personal interest.

Further examples (on disc please) and the use of even more sophisticated formula than 'vlookup' will be most welcome. Furthermore, if you think that this is what you want to read in this column (or not – perhaps it's too complicated), please let me know. I need to know how hard to make the examples.

Problems

Although Abacus Training is not part of the official Norwich Computer Services' Technical Help Service I am getting some redirected questions as well as letters direct from PipeLine readers. When I get your question I do my best to give you an answer (a stamp for a reply would be appreciated but there is no need to send me an envelope and I sometimes send a disc). If I don't know the answer, I include your question in the PipeLine column because some other reader may know of a solution.

I send a copy of any really hard problems to Robert Macmillan at Colton. I have found Colton most conscientious. They look into the problem and more often than not come up with an explanation which is sometimes worth publishing because it will interest other readers. Many problems do not have simple answers. A typical PipeDream user will have installed many applications and modules such as: font manager, RISC-OS printer drivers, C library, floating point emulator, wimp manager, etc. All these have to work together and it is sometimes (often) not PipeDream's fault when the system crashes with a message such as 'Invalid number of output bits – printing cancelled' but some weird combination which is difficult (particularly for me) to reproduce.

The solution is sometimes to obtain an upgrade of some (obscure!) module (e.g. ColourTrans) rather than to tinker with PipeDream. I haven't yet got the problems and their solutions on a PipeDream database – but I'm working on it! Thank goodness there aren't too many of that type!

Disc copies of PipeLine files

All this month's disc files are available from Norwich Computer Services by buying their mon-

thly disc. Alternatively, you can write to me at the Abacus Training address sending me a stamp and a disc (formatted please) in a jiffy bag asking for the files (a mixture of back numbers?) you want. I will copy them to your disc and return it in your jiffy bag.

STOP PRESS!!

Free upgrade to PipeDream 3.10

Colton have just let me know that version 3.10 is available to all registered users as a free upgrade. It has many exciting new features that I haven't time to tell you about this month. To get your free

upgrade in the shortest possible time, send your master disc to Colton together with a self-addressed 9" x 4" envelope (with a 20p stamp if you can afford it – to encourage Colton to make their next upgrade a free one too) and a piece of card with the disc (lightly!) sellotaped to it. 3.10 is well worth two 20p stamps!

Contributions to PipeLine

Thanks once again to all who have sent in a contribution to this month's PipeLine. Please keep sending them in to me at the Abacus Training address given on the inside back cover of Archive. **A**

Graphics Techniques in RISC-OS

Hugh Eagle

This article is based around a demonstration application called !Kaleido. The core of the program is a very simple graphics routine (13 lines long) which I have borrowed from the old Acornsoft book "Creative Graphics". However, my purpose is not to describe that routine but to demonstrate how, by plotting direct to a sprite rather than to the screen, it is possible to build up graphic images that can be displayed in a window of any size and can be quickly redrawn when the window is moved or uncovered or resized.

Compared with the more common method of displaying moving graphics, which involves remembering the steps by which the current image was built up and redrawing it from scratch whenever the window changes, the method illustrated here is less efficient in terms of memory used but will tend to be easier to program and to be much faster when responding to a window change. For an example of how slow the other method can be have a look at how long it takes to redraw a complicated !Draw picture.

The basic structure of the program is common to all Wimp programs: various variables are set up, the Window Manager is informed of the task's existence, the window is defined and opened and then the WimpPoll loop is called. The program continues in this loop repeatedly doing a bit of processing then passing control back to the Window Manager until the user decides to quit, whereupon the task is closed down and the program ends.

The meat of the program is in PROCKaleido which is called whenever WimpPoll returns with reason code 0, i.e. when nothing else is happening. However, the purpose of this article is not to discuss this routine or the more common features of Wimp programming which the program uses (which have been covered in a variety of articles) but to explain the following particular features of the demonstration program:

1. Setting up a user sprite area and creating a blank sprite.
2. Directing VDU output to a sprite and then back to the screen.
3. Plotting a sprite to the correct scale to fit into any size of window.
4. Adjusting the scale and colours to suit any screen mode and responding to mode changes.
5. Using Wimp_UpdateWindow rather than Wimp_RedrawWindow (to avoid blanking of the screen each time the sprite is plotted and also to get quicker plotting.)

Setting up the user sprite area and creating a blank sprite

Since the sprite to which the program does its plotting is used only by this application, the appropriate place to put it is a user sprite area within the application's private memory slot. Of the alternative sprite areas, the Wimp sprite pool is only intended for application and filetype icons and other (usually small) sprites that are shared by a number of different applications, while the use of

the system sprite area is discouraged altogether under RISC-OS.

The user sprite area is set up and the sprite initialised in PROCSetUpSprite. First of all, the screen mode and size of the sprite are defined. The choice of these is to a great extent arbitrary since the sprite is actually displayed in the current Wimp screen mode and is adjusted in size to fit the window. I have used mode 20 for no better reason than that the pixels are square (2x2) and this is the mode I normally use. The size of the sprite is a trade off between better picture definition on the one hand and amount of memory used and speed of drawing on the other. For the purposes of this program a sprite which is 200 pixels square seems to give reasonable results.

Once the sprite size has been decided, a block of memory is reserved at SpriteBlock% big enough to hold the sprite and a few extra bytes for the header information at the beginning of the block. PROCInitialiseSpriteArea then sets up the header for the block and initialises it as a user sprite area by calling the SWI "OS_SpriteOp" with registers as follows:

R0 - 9+256 (reason code for initialising a sprite area)

R1 - pointer to SpriteBlock%

(Note that 256 is added to all OS_SpriteOp calls which relate to a user sprite area where the sprite is referred to by name, while 512 is added if the sprite is pointed to direct. If the call relates to the system sprite area nothing is added.)

The format of a user sprite area header is:

SpriteBlock%!0 - size of sprite area (in bytes)

SpriteBlock%!4 - number of sprites in area

SpriteBlock%!8 - offset (in bytes) from start of area to first sprite (usually 16)

SpriteBlock%!12 - offset to byte after last sprite (i.e. to where the next sprite will go)

SpriteBlock%!16 - beginning of first sprite (unless there is an "extension area")

Before "OS_SpriteOp", 9+256 is called, SpriteBlock%!0 and SpriteBlock%!8 must be set to the appropriate values. The SWI sets up the rest of the header.

Once the sprite area is ready, a blank sprite called "KliSprite" is created by calling "OS_SpriteOp" with registers as follows:

R0 - 15+256 (reason code for creating a sprite)

R1 - pointer to SpriteBlock%

R2 - pointer to sprite name, "KliSprite"

R3 - palette flag (0 if the sprite doesn't have its own palette, 1 if it does)

R4 - width in pixels

R5 - height in pixels

R6 - mode number

Redirecting VDU output

The redirection of all VDU actions to a sprite is achieved by calling "OS_SpriteOp" with registers as follows:

R0 - 60+256 (reason code for switching output to a sprite)

R1 - pointer to SpriteBlock%

R2 - pointer to sprite name

and recording the previous VDU settings which are returned in registers 0 to 3. From then on, everything that would normally be plotted to the screen is plotted to the sprite as if it were a graphics window sitting at the bottom left-hand corner of the screen. When the program has finished plotting to the sprite it returns the VDU settings back to their previous values simply by calling "OS_SpriteOp" with registers 0 to 3 set to the values saved by the previous call.

Scaled sprite plotting

Plotting the sprite to fit into the current window size is achieved by setting up a table of scale factors and calling "OS_SpriteOp" with registers as follows:

R0 - 52+256 (reason code for scaled plotting)

R1 - pointer to SpriteBlock%

R2 - pointer to sprite name

R3 - x coordinate of bottom left-hand corner of window

R4 - y coordinate of bottom left-hand corner of window

R5 - plot action (as in GCOL)

R6 - pointer to scale table

R7 - colour translation table (see below)

This is demonstrated in `PROCDrawRectangle` which is called by both `PROCUpdateWindow` and `PROCRedrawWindow`. The format of the scale table is:

Scale%10 – x multiplier (i.e. the width of the window in this example)

Scale%14 – y multiplier (i.e. the height of the window)

Scale%18 – x divisor (i.e. the width of the sprite)

Scale%112 – Y divisor (i.e. the height of the sprite)

Since all the scaling calculations are done in terms of pixels rather than screen units, it is necessary to convert the window dimensions into pixels and to do this the program needs to know the pixel size for the current mode...

Mode independence

Mode independence involves three things: (a) taking account of the pixel size for the current mode when plotting the sprite (b) using the appropriate colour range and (c) responding to mode changes.

The first is achieved by keeping a note of the pixel size in the current screen mode and using that information when plotting the sprite to the screen. The short procedure `PROCReadModeVars` uses the SWI "OS_ReadModeVariable" to find out the pixel size in the current screen mode. This SWI can be called with R0 set either to a mode number, in which case it will give information about that mode, or (as in this example) to -1, when it will give details of the current mode. The information given depends on the setting of R1. This program demonstrates two of the possibilities. `PROCReadModeVars` is called first at the beginning of the program and subsequently whenever the task receives the message that is broadcast by the Window Manager if the mode is changed (i.e. whenever the `Wimp_Poll` call returns with reason code 17 and `block%16 = &400C1`).

The complex process of adapting the 16 colours of the sprite to whatever range of colours may be available in the current mode is made very easy by the combination of the two SWIs "Wimp_ReadPixTrans" and "OS_SpriteOp" with reason code 52+256 as used in `PROCDrawRectangle`. The former is called with registers set as follows:

R0 – 256 (because the sprite is in a user area and referred to by name, as with "OS_SpriteOp")

R1 – pointer to `SpriteBlock%`

R2 – pointer to sprite name

R7 – pointer to a block of memory which will hold the colour translation table

The translation table is then passed straight on (still pointed to by R7) to "OS_SpriteOp", 52+256 which takes care of the actual colour translation as well as the scaling described above.

Use of "Wimp_UpdateWindow"

The normal SWI for drawing the contents of a window is "Wimp_RedrawWindow". This program uses that routine (as it is obliged to under the Wimp rules) when the Window Manager becomes aware that part of the window needs redrawing and returns reason code 1 from `WimpPoll`. However, for redrawing at other times (in particular each time the sprite is altered) it is better to use "Wimp_UpdateWindow" because it is quicker and, more importantly, because the window is not blanked before the contents are redrawn as it is by `Wimp_ForceRedraw`. Repeated rapid blanking of a window can be quite uncomfortable to watch.

Using `Wimp_UpdateWindow` is slightly more complicated because the task must first use "Wimp_GetWindowInfo" to find out where the window is and how big it is. The visible window coordinates are returned in the four words starting at `block%14` and are used for actually plotting the sprite. The work area coordinates of the whole window are returned in the four words starting at `block%144`. Before calling "Wimp_UpdateWindow" the work area coordinates of the part of the window which is to be updated (which for simplicity is taken to be the whole window in this example) are copied to the four words at `block%14`. The `UpdateWindow` routine then proceeds similarly to the `RedrawWindow` routine described in previous articles. "WimpUpdateWindow" returns with the graphics clip rectangle set to all or, if the window is overlapped by another, part of the visible window, the program plots the sprite and then if there is more than one rectangle, enters a loop which repeatedly calls "Wimp_GetRectangle" until all visible parts of the window have been updated.

Some points to note

The !Run file for this application need only contain two commands:

```
Wimpslot -min 64K -max 64K
<Obey$Dir>.!RunImage
```

The Wimp slot of 64k is needed to hold the user sprite area as well as the program and its variables. I have learnt from bitter experience that it is important to set a big enough slot size, having spent hours investigating a "Too many nested structures" error that was continually reported by a program that hardly had any structures in it. Be warned that if you don't give a task a big enough slot, it won't necessarily tell you in a friendly way!

The second half of the program (from FNWimpInit) contains procedures and functions which can be used without modification in any Wimp program, while those in the first half (as far as PROCKaleido) are either unique to this particular program or have been adapted to fit it. The second half is in fact part of the BASIC "Library" of procedures and functions which I have built up for use in Wimp programs. I call it "WimpLib" and file it in the Library directory of my disc. By including the command "*SET File\$Path, %." in my boot routine, I can load it by the simple BASIC command "LIBRARY WimpLib". Since they have been amply described in a number of previous articles, I have not described the WimpLib routines in any detail.

```
10 REM >Listing for !Kaleido
20 :
30 ON ERROR REPORT:PRINT" at line ";
    ERL:END
40 REM This error routine applies
50 REM only until the Wimp is
    initilaised.
60 :
70 DIM block% 256,errblk% 256
80 PROCSetUpSprite
90 PROCReadModeVars
100 DIM Scale% 16,ColTable% 16
110 PROCStandardWindowColours
120 REM This PROC sets up variables
    with the conventional colours
130 REM for window titles, scroll
    bars, etc. as recommended
    in the PRM.
140 REM These variables are used in
    FNCreateWindow
150 WindowFlags%=FNWindowFlags(1,0,0,
    1,1,0,0,0,0,1,1,1,1,1,1)
```

```
160 REM This sets up the window
    flags word which defines
170 REM whether the window has a
    title bar, scroll bars, etc.
180 TitleFlags%=FNIconFlags(1,0,1,1,
    1,1,0,0,0,0,0,0,0,0,7,2,0)
190 REM This sets up the title bar
    flags word
200 ButtonType%=0
210 REM Window work area will not
    respond to any button clicks
220 WorkAreaMinX%=0:WorkAreaMinY%=0
    :WorkAreaMaxX%=800
    :WorkAreaMaxY%=800
230 REM This defines the maximum
    size of the window.
240 InitialX%=400:InitialY%=400
    :InitialWidth%=200
    :InitialHeight%=200
250 REM This defines the position
    and size of the window
    when first opened.
260 :
270 TaskName$="Kaleido"
280 TaskId%=FNWimpInit(200,TaskName$)
290 REM This tells window manager
    that a new task is starting
300 ON ERROR PROCError(TaskName$)
310 REM From now on this error
    routine applies and error
320 REM messages are reported in a
    Wimp_ReportError window
330 REM See the end of WimpLib.
340 :
350 WindowHandle%=FNCreateWindow
    (InitialX%,InitialY%,InitialX%+
    InitialWidth%,InitialY%+
    InitialHeight%,0,0,-1,WindowFlags%,
    WorkAreaMinX%,WorkAreaMinY%,
    WorkAreaMaxX%,WorkAreaMaxY%,
    TitleFlags%,ButtonType%,1,
    0,0,TaskName$)
360 REM This passes details to SWI
    "Wimp_CreateWindow".
370 !block%=WindowHandle%
380 PROCOpenWindow(block%)
390 REM This PROC calls "Wimp_
    OpenWindow" which opens the
    blank window.
400 :
410 PROCPollLoop
```

```

420 REM This PROC contains main          770 WHEN 3 : PROCcloseWindow
      program loop - see below.          (block%)
430 REM The loop ends only when the      780 quit%=TRUE
      "close" icon is clicked, or the    790 REM The Close icon has been
440 REM "quit" option in the Task        clicked, so quit.
      Manager is chosen, or if          800 WHEN 17,18:PROCProcessMessage
450 REM there is an error.              (block%)
460 :                                    810 REM Task has received a
470 PROCWimpCloseDown(TaskId%)           message via Window Manager.
480 REM This tells window manager        820 OTHERWISE
      that the program is ending        830 ENDCASE
490 END                                  840 UNTIL quit%
500 REM *****                          850 ENDPROC
510 :                                    860 :
520 DEF PROCSetUpSprite                  870 DEF PROCProcessMessage(block%)
530 width%=400:height%=400              880 IF block%!!16=&400C1 THEN
540 mode%=20:width_pix%=width%/2:      PROCReadModeVars
      height_pix%=height%/2:Ncol%=16    890 REM This message is received
550 DIM SpriteBlock% (width_pix%      when screen mode is changed,
      *height_pix%/2+100)              900 REM so re-read mode variables.
560 PROCInitialiseSpriteArea            910 IF block%!!16=0 THEN quit%=TRUE
      (SpriteBlock%,(width_pix%      920 REM This message is received
      *height_pix%+100))              when menu is clicked on this
570 SYS "OS_SpriteOp",15+256,           930 REM application in the Task
      SpriteBlock%,"KliSprite",0      Manager window and "Quit"
      ,width_pix%,height_pix%,20      940 REM option is chosen.
580 ENDPROC                             950 ENDPROC
590 :                                    960 :
600 :                                    970 :
610 DEF PROCPollLoop                    980 DEF PROCDraw
620 LOCAL mask%,quit%                  990 PROCkaleido
630 mask%=0                             1000 REM See below ...
640 REM Allow all reason codes to       1010 PROCUpdateWindow(WindowHandle%)
      be returned by WimpPoll           1020 ENDPROC
650 quit%=FALSE                         1030 :
660 REPEAT                              1040 DEF PROCUpdateWindow(WHandle%)
670 SYS "Wimp_Poll",mask%,block%      1050 REM Included here rather than
      TO reason%                       in WimpLib because the way the
680 CASE reason% OF                    1060 REM window is redrawn will vary
690 WHEN 0 : PROCDraw                   from program to program.
700 REM When nothing else is          1070 !block%=WHandle%
      happening keep on drawing.       1080 SYS "Wimp_GetWindowInfo",,block%
710 WHEN 1 : PROCRedrawWindow          1090 MinX%=block%!4
      (block%)                         1100 MinY%=block%!8
720 REM If Window Manager              1110 MaxX%=block%!12
      advises this task that window    1120 MaxY%=block%!16
730 REM needs to be redrawn it         1130 block%!4=block%!44
      should do as it is told!         1140 block%!8=block%!48
740 WHEN 2 :PROCOpenWindow(block%)     1150 block%!12=block%!52
750 REM This reason code is           1160 block%!16=block%!56
      returned if the window has
760 REM been moved or resized.         1170 SYS "Wimp_UpdateWindow",,block%
                                          TO more%

```

```

1180 WHILE more%
1190   PROCDrawRectangle (MinX%,MinY%
                        ,MaxX%,MaxY%)
1200   SYS "Wimp_GetRectangle",,
                        block% TO more%
1210   ENDWHILE
1220 ENDPROC
1230 :
1240 DEF PROCDrawRectangle (MinX%,MinY%
                        ,MaxX%,MaxY%)
1250 !Scale%=(MaxX%-MinX%)/Xpix%
1260 Scale%!4=(MaxY%-MinY%)/Ypix%
1270 Scale%!8=width_pix%
1280 Scale%!12=height_pix%
1290 SYS "Wimp_ReadPixTrans",256,
      SpriteBlock%,"KliSprite"
      ,,,,ColTable%
1300 SYS "OS_SpriteOp",52+256,
      SpriteBlock%,"KliSprite",MinX%
      ,MinY%,0,Scale%,ColTable%
1310 ENDPROC
1320 :
1330 DEF PROCRedrawWindow(block%)
1340 SYS "Wimp_RedrawWindow",,block%
      TO more%
1350 WHILE more%
1360   MinX%=block%!4
1370   MinY%=block%!8
1380   MaxX%=block%!12
1390   MaxY%=block%!16
1400   PROCDrawRectangle (MinX%,MinY%
                        ,MaxX%,MaxY%)
1410   SYS "Wimp_GetRectangle",,
                        block% TO more%
1420 ENDWHILE
1430 ENDPROC
1440 :
1450 DEF PROCReadModeVars
1460 SYS "OS_ReadModeVariable",-1,4
      TO ,,Xpix%:Xpix%=2^Xpix%
1470 SYS "OS_ReadModeVariable",-1,5
      TO ,,Ypix%:Ypix%=2^Ypix%
1480 ENDPROC
1490 :
1500 DEF PROCKaleido
1510 SYS "OS_SpriteOp",60+256,
      SpriteBlock%,"KliSprite"
      TO v0%,v1%,v2%,v3%
1520 VDU 29,width%/2;height%/2;
1530 IF RND(100)=1 THEN C%=RND(Ncol%)
      -1:GCOL 0,C%:RECTANGLE FILL -width%
      /2,-height%/2,width%,height%
1540 REM This blanks the sprite every
      now and then
1550 X1%=RND(width%/2):X2%=RND(width%
      /2):X3%=RND(width%/2)
1560 Y1%=RND(X1%):Y2%=RND(X2%):Y3%
      =RND(X3%)
1570 C%=RND(Ncol%)-1
1580 GCOL C%
1590 MOVE X1%,Y1%:DRAW X2%,Y2%:
      PLOT 85,X3%,Y3%
1600 MOVE -X1%,-Y1%:DRAW -X2%,-Y2%:
      PLOT 85,-X3%,-Y3%
1610 MOVE X1%,-Y1%:DRAW X2%,-Y2%:
      PLOT 85,X3%,-Y3%
1620 MOVE -X1%,Y1%:DRAW -X2%,Y2%:
      PLOT 85,-X3%,Y3%
1630 MOVE Y1%,X1%:DRAW Y2%,X2%:
      PLOT 85,Y3%,X3%
1640 MOVE -Y1%,X1%:DRAW -Y2%,X2%:
      PLOT 85,-Y3%,X3%
1650 MOVE -Y1%,-X1%:DRAW -Y2%,-X2%:
      PLOT 85,-Y3%,-X3%
1660 MOVE Y1%,-X1%:DRAW Y2%,-X2%:
      PLOT 85,Y3%,-X3%
1670 SYS "OS_SpriteOp",v0%,v1%,v2%,v3%
1680 ENDPROC
1690 :
1710 REM >WimpLib
1720 REM *****
1730 :
1740 DEF FNWimpInit (Version%,
      TaskName%)
1750 SYS "Wimp_Initialise",Version%
      ,&4B534154,TaskName$ TO
      Version%,Taskid%
1760 =Taskid%
1770 :
1780 DEF PROCWimpCloseDown (Taskid%)
1790 SYS "Wimp_CloseDown",Taskid%
      ,&4B534154
1800 ENDPROC
1810 :
1820 DEF FNCreateWindow (MinX%,MinY%
      ,MaxX%,MaxY%,ScrX%,ScrY%,Pos%
      ,WindowFlags%,WorkMinX%
      ,WorkMinY%,WorkMaxX%,WorkMaxY%
      ,TitleIconFlags%,WorkBut%
      ,SpriteCtrlBlk%,MinWidth%
      ,MinHeight%,Title$)
1830 LOCAL handle%
1840 block%!4=MinX%
1850 block%!8=MinY%

```

```

1860 block%!12=MaxX%                                ,CloseIcon%,TitleBar%,Toggle%
1870 block%!16=MaxY%                                ,VScroll%,Adjust%,HScroll%)
1880 block%!20=ScrX%                                2320 LOCAL flags%
1890 block%!24=ScrY%                                2330 flags%=&80000000
1900 block%!28=Pos%                                2340 IF Moveable% THEN flags% =
1910 block%!32=WindowFlags%                          flags% OR 2
1920 block%!36=WinTitleForeCol%                      2350 IF WimpRedraw% THEN flags% =
1930 block%!37=WinTitleBackCol%                      flags% OR &10
1940 block%!38=WorkForeCol%                          2360 IF Pane% THEN flags% = flags%
1950 block%!39=WorkBackCol%                          OR &20
1960 block%!40=ScrollOuterCol%                      2370 IF MoveOutside% THEN flags% =
1970 block%!41=ScrollSliderCol%                      flags% OR &40
1980 block%!42=TitleHighlightCol%                   2380 IF ScrollRequest% THEN flags% =
1990 block%!43=0                                     flags% OR &100
2000 block%!44=WorkMinX%                            2390 IF NoScrollAutoRepeat% THEN
2010 block%!48=WorkMinY%                          flags% = flags% OR &200
2020 block%!52=WorkMaxX%                            2400 IF Gcols% THEN flags% = flags%
2030 block%!56=WorkMaxY%                          OR &400
2040 block%!60=TitleIconFlags%                     2410 IF Back% THEN flags% = flags%
2050 block%!64=WorkBut%*&1000                      OR &800
2060 block%!68=SpriteCtrlBlk%                      2420 IF HotKeys% THEN flags% = flags%
2070 block%!72=MinHeight%+MinWidth%                OR &1000
                                           *&10000 2430 IF BackIcon% THEN flags% =
                                           flags% OR &1000000
2080 $(block%+76)=Title$                            2440 IF CloseIcon% THEN flags% =
2090 block%!88=0 : REM Initial number                flags% OR &2000000
           of icons
2100 SYS "Wimp_CreateWindow",,                      2450 IF TitleBar% THEN flags% =
           block%+4 TO handle%                      flags% OR &4000000
2110 =handle%                                        2460 IF Toggle% THEN flags% = flags%
2120 :                                              OR &8000000
2130 DEF PROCStandardWindowColours                 2470 IF VScroll% THEN flags% = flags%
2140 WinTitleForeCol%=7                            OR &10000000
2150 WinTitleBackCol%=2                            2480 IF Adjust% THEN flags% = flags%
2160 WorkForeCol%=7                                OR &20000000
2170 WorkBackCol%=1                                2490 IF HScroll% THEN flags% = flags%
2180 ScrollOuterCol%=4                              OR &40000000
2190 ScrollSliderCol%=2
2200 TitleHighlightCol%=15
2210 ENDPROC
2220 :
2230 DEF PROCOpenWindow(block%)
2240 SYS "Wimp_OpenWindow",,block%
2250 ENDPROC
2260 :
2270 DEF PROCcloseWindow(block%)
2280 SYS "Wimp_CloseWindow",,block%
2290 ENDPROC
2300 :
2310 DEF FNWindowFlags(Moveable%,
           ,WimpRedraw%,Pane%,MoveOutside%
           ,ScrollRequest%,NoScrollAutoRepeat%
           ,Gcols%,Back%,HotKeys%,BackIcon%
           ,CloseIcon%,TitleBar%,Toggle%
           ,VScroll%,Adjust%,HScroll%)
2320 LOCAL flags%
2330 flags%=&80000000
2340 IF Moveable% THEN flags% =
           flags% OR 2
2350 IF WimpRedraw% THEN flags% =
           flags% OR &10
2360 IF Pane% THEN flags% = flags%
           OR &20
2370 IF MoveOutside% THEN flags% =
           flags% OR &40
2380 IF ScrollRequest% THEN flags% =
           flags% OR &100
2390 IF NoScrollAutoRepeat% THEN
           flags% = flags% OR &200
2400 IF Gcols% THEN flags% = flags%
           OR &400
2410 IF Back% THEN flags% = flags%
           OR &800
2420 IF HotKeys% THEN flags% = flags%
           OR &1000
2430 IF BackIcon% THEN flags% =
           flags% OR &1000000
2440 IF CloseIcon% THEN flags% =
           flags% OR &2000000
2450 IF TitleBar% THEN flags% =
           flags% OR &4000000
2460 IF Toggle% THEN flags% = flags%
           OR &8000000
2470 IF VScroll% THEN flags% = flags%
           OR &10000000
2480 IF Adjust% THEN flags% = flags%
           OR &20000000
2490 IF HScroll% THEN flags% = flags%
           OR &40000000
2500 =flags%
2510 :
2520 DEF FNIconFlags(Text%,Sprite%
           ,Border%,HCentre%,VCentre%,Filled%
           ,Anti_alias%,WimpCannotRedraw%
           ,Indirected%,RightJustify%
           ,DoNotCancel%,HalfSize%,ButtonType%
           ,ESG%,Shaded%,ForeCol%
           ,BackCol%,FontHandle%)
2530 LOCAL flags%
2540 flags%=0
2550 IF Text% THEN flags%=flags% OR 1
2560 IF Sprite% THEN flags%=flags%
           OR 2
2570 IF Border% THEN flags%=flags%
           OR 4

```

```

2580 IF HCentre% THEN flags%=flags%
                                OR 8
2590 IF VCentre% THEN flags%=flags%
                                OR &10
2600 IF Filled% THEN flags%=flags%
                                OR &20
2610 IF Anti_alias% THEN flags%=
                                flags% OR &40
2620 IF WimpCannotRedraw% THEN
                                flags%=flags% OR &80
2630 IF Indirected% THEN flags%=
                                flags% OR &100
2640 IF RightJustify% THEN flags%=
                                flags% OR &200
2650 IF DoNotCancel% THEN flags%=
                                flags% OR &400
2660 IF HalfSize% THEN flags%=
                                flags% OR &800
2670 IF ButtonType% THEN flags%=
                                flags% OR (ButtonType% * &1000)
2680 IF ESG% THEN flags%=flags% OR
                                (ESG% * &10000)
2690 IF Shaded% THEN flags%=flags%
                                OR &400000
2700 IF NOT Anti_alias% THEN
2710   IF ForeCol% THEN flags%=flags%
                                OR (ForeCol% * &1000000)
2720   IF BackCol% THEN flags%=flags%
                                OR (BackCol% << 28)
2730 ELSE
2740   IF FontHandle% THEN flags%=
                                flags% OR (FontHandle% *
                                &10000000)
2750 ENDIF
2760 =flags%
2770 :
2780 DEF PROCInitialiseSpriteArea(S%
                                ,Length%)
2790 !S%=Length%
2800 S%!=16
2810 SYS "OS_SpriteOp", 9+256, S%
2820 ENDPROC
2830 :
2850 DEF PROCError(TaskName%)
2860 !errblk%=ERR
2870 $(errblk%+4)=REPORT$+" at line "
                                +STR$ERL
2880 errblk%?(4+LEN$(errblk%+4))=0
2890 SYS "Wimp_ReportError", errblk%,1
                                ,TaskName$
2900 PROCWimpCloseDown(Taskid%):END
2910 ENDPROC

```

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Using !Draw and !Edit

Dave Smith

I have found that it is quite possible to use a combination of !Edit and !Draw to create some very effective DTP-type output. The effects produced – even on a 9 pin printer – are quite impressive.

During my efforts at producing documents in this way, I have encountered a number of points/wrinkles. Perhaps many of you have met them too – indeed, you may have some better suggestions but, in the true spirit of Archive, I shall assume that there are some who have not. Those of you who have invested more time in exploring !Draw than I have, may like to share their knowledge and earn the gratitude of the many who – like myself – have limited time to delve.

!Edit

Firstly, a couple of hints about using !Edit. Did you realise that a portion of text can be moved from one text file to another as easily as within a single file? All that is necessary is to have both files in separate !Edit windows, select the text to move/copy and reposition the cursor in the other file at the position to move to. Specify the type of move (<ctrl-V> to move it, <ctrl-C> to copy it) and it is done!

The same previous FIND string is also remembered between different files so it is possible to have two or more files on screen at once and use the same find string as was previously used on the other file.

!Draw

There are a lot of things about !Draw that the manual doesn't tell you and a lot of things that you learn through trial and error. Here are a few.

Finding lost objects

Occasionally when playing about with magnifying parts of drawings I have managed to lose contact with some objects in the drawing. This is especially true when I have 'zoomed' the current window. Further, I have found that even calling up a second view with halved magnification so as to see the whole printable page is not always an answer. This may be because the object is too small to be readily detected or because it has moved off the visible/printable portion. There is a simple trick that can be

tried. Select all objects and little boxes with handles appear around even the smallest picture object. If the lost object is not immediately detectable then try de-selecting objects which you recognise and see what's left. Lastly try selecting all and then GROUPing all the objects. The whole picture now becomes framed and any off-screen object will cause the frame to extend off screen too. A small view window can be used to find the errant corner and hence the missing object.

Select from the menu

Although it is indicated in the User Guide, it is worth repeating that it is possible to enter select mode just by clicking on the select option directly from the main !Draw menu. This can be very useful when not all of the toolbox is visible or when it is turned off. If you are working with several !Draw windows (as opposed to different views) at once then you will find that only one window can have select on at a time.

Selecting thin lines

Drawing lines with the Grid Lock set to On allows the production of perfect horizontal or vertical straight lines. However unlike diagonal lines which can also be produced, the vertical/horizontal lines can be very difficult to move. I have found that I can select them but when trying to move them once selected I invariably end up de-selecting them – and worse – selecting something else which gets moved instead. The answer to this is that when something has been selected it can be magnified. It is now easy to move with the pointer and if the grid lock is in use, it can be accurately positioned before de-magnifying. If grid lock is not in use then it will probably be better to zoom the window instead of using magnify. This has the drawback of requiring font recalculations if any non-system text has been used.

Care with select when zoomed

As I have said, it is possible to have problems selecting the wrong objects. This occurs most frequently when working with a zoomed window with objects which are layered one above another. I frequently find that when trying to select a small object, I miss it or do not realise that it is in a layer

below other objects. It is easy not to notice that the wrong object is selected if none of the select box perimeter occurs within the window. My only solution here is to have another view window which is not zoomed and so shows a wider view.

Repositioning small objects

I got fed up with repeatedly pushing a selected object up to the top of the window and then scrolling the window up in order to move an object from the bottom to the top of a page (as when importing text from !Edit). I was not happy reducing the screen size with zoom so that the whole of the A4 page is on screen as this required font recalculation. Eventually I discovered that an object can be moved any distance by opening up another view window with 'new view' and positioning this window at the position required using the scroll bars. The selected object can then be moved directly into this new window – it is now repositioned. What's more, the new window does not even need to be at the same magnification.

Multipage documents

I have managed to produce multipage !Draw pages from a single !Edit text file, but it is a fiddle. It involves opening multiple !Draw instances (i.e. clicking on the !Draw icon on the icon bar) one for each page. The same !Edit text can be dropped into each but arranged so that the printable area (as shown by the print border, available from the Misc –Paper limits –Show menu option) is consecutive in each instance. I find this easier than just using one window and moving the text in it between printing as I can save the pages so that they can be printed later. It is also easier to get the text correctly lined up between pages. It may be necessary to blank out some text from a previous/subsequent page so as to achieve a suitable page layout. This is simply achieved by overlaying the unwanted text with a white filled rectangle with a white (or invisible) perimeter.

When printing via a Postscript printer I was amazed to find that the whole of the text was printed for each file. By examining the postscript output (which is in ASCII and easily viewed with !Edit) I found that each page did indeed contain the whole of the text and not just that portion within the printable area. This is a difference between the !PrinterDM and

!PrinterPS printer drivers. To overcome it just blank out all the text except that which you want to print.

Embedded graphics

One of the features of DTP is the ability to have text flow around pictures. The Draw/Edit combination can be made to reproduce this effect but with much effort. The technique requires the use of columns to split up the text. The columns are lined up under each other rather than alongside one another. Now the columns can have different widths that are determined when in !Draw and so by locating a graphic alongside a column with a reduced width, the effect mentioned can be reproduced. Aligning the text so that it appears as if produced in one flow is a problem which only proved possible with much trial and error as grid lock is not much use. I have done it but would welcome any ideas to make it easier.

Using layering to good effect

I have used the ability to layer drawn objects one under each other to good effect when producing complex figures. The judicious use of filled rectangles with an invisible perimeter sandwiched between drawing layers can be used to blank out portions which should not be visible.

Vertical writing

It is simple to produce the vertical writing often used in graphs where each letter falls underneath its neighbour. Use the text option in !Draw and, with the required font set, just type in each letter but pressing <return> between them. Each letter will then be neatly lined up vertically. If you want to move the vertical text remember to select each letter (and you may wish to group them to make it easier for moving in the future).

Importing pictures

The 'Save-selection' option can be used to move part of a drawing between two separate !Draw windows. To copy the drawing to the other window simply drag the save icon and drop it in the other window. Unfortunately nothing seems to happen but the drawing has been copied across. !Draw insists on depositing the imported drawing outside the viewable page.* To find it just set the page size in !Draw to the next larger size. The imported drawing usually occurs just above the previous page boundary. With the page size increased it is

now possible to move the !Draw window to find it.

[* The reason that objects imported into !Draw using the SAVE mechanism usually appear outside the current page is because importing involves copying the whole file to the current pointer position. !Draw files are usually A4 size, so the copied file is overlayed onto the current !Draw file but the pointer defines at the position the file starts, so the object is displaced and is usually outside the page. It seems then that !Draw always maintains the object's relative position in the file even if you only SAVE selected objects.]

Another method I have discovered, is to select the objects in one !Draw window and then move the mouse to the other !Draw's window. Although nothing in this second window will be selected, choosing the select menu option will show that copy is available. Click it on and the objects are copied from the first window to the second and seem to take up a similar position as in the first !Draw window. With this technique, it should be possible to develop !Draw files containing multiple library objects which can be imported across into your working document. As long as the library file page size is not larger than the destination file I can foresee no problems.

Hanging indents

I had severe problems producing hanging indents with !Draw!/Edit and, whilst my solution works, it is not elegant. Part of the solution relies upon the fact that the !Draw text area command to set the left and right margins, \M, does not affect the line which contains it but starts at the next line (unless it occurs at the very start of the line). Thus it is possible to arrange for any of the text following this to be indented by a fixed amount and then reset to the same as the main text with a following text area command \M 1 1.

The problem is in how much to indent the text so that it lines up with the start of the text in the first line. The majority of the problem occurs because all the common non-system fonts except Corpus have variable sized characters and so the indent is not a fixed amount but is dependent upon the character(s) comprising the element marker. I admit that I cheat and use trial and error to find the correct size (simple with both the !Edit and !Draw window on-screen at

the same time). However, once it is set up, I can change the text for the element without altering the settings. If anyone has a better method, let us know.

Care with mixed font sizes

I became confused by a mysterious loss of text when using multiple columns until I realised that some of the text was in a larger than normal font size but my line spacing text area command, \L, was set for my normal font size. Not wishing to end up with enormous gaps between lines I found that a compromise setting, between the normal and larger font size, restored my lost text. Better still, use several \L commands.

!PrinterPS

I have had access to a PostScript compatible laser printer and so have had some experience using !PrinterPS. This application produces PostScript output which can be used to produce very high quality printed pages. It has added flexibility in that much of the postscript setting up is fixed and held in text files. These are located within the !PrinterPS application directory and are !Edit-able.

ZapfDingbat

This was not recognised by the postscript printer I was using and so all references to it had to be removed from the application's PSprolog file.

A4 Command

This is apparently a common, but optional, Postscript command accepted by some printers but not by others. After consulting a guru (systems kind) it became clear that the use of the postscript command "a4" to set the paper size was redundant on our printer since it only takes A4 paper. Since the "a4" command is generated within the device driver according to the !Draw setting, it does not occur in the !PrinterPS application text files and so I couldn't easily stop it being included for each print run. However, it is possible to avoid the effect when the "a4" command is not recognised by the printer by giving it a null definition. This is done by adding a postscript command line to the end of the application's PSprolog file which appears thus:

```
/a4 {} def
```

The case and spacing is significant apparently. **A**

Knowledge Organiser

John Schild

Knowledge Organiser is Clares' enhanced version of the privately published ArcTFS. It is functionally a database with a very flexible field length structure, offering search and sort facilities but not numeric calculations. It is aimed at users who need to collect abstracts, quotations, references to research, etc and incorporate these in their own documents. I can say at once that it fulfils that purpose to an acceptably high standard.

"KO" is presented on a single, unprotected, 800k disc with a clear and nicely produced manual of 80 pages. It is not multi-tasking but has been written for use from the desk-top: double clicking on the filer icon loads the program to the icon bar from which it can be selected in the usual way. An exit routine returns the user to the desktop, hopefully with other previous operations undisturbed. I had no problems on a 440 but I suspect 1M machine users would be well advised to save all working files first. KO transfers happily to a hard disc. A sample text file on the origins of the French Revolution is also provided on the disc.

When KO is selected, a title window opens with the screen displaying, on the left, icons representing the disc drives with available space information and, on the right, the contents of the current directory. Selecting a directory containing a KO text file opens a new screen window divided into three: a text file area where new text might be typed in, edit-ed or browsed, a linker file area where optional search codes, of the user's choice, may be entered and displayed and a menu area allowing access to a wide range of useful text manipulation functions. I guess the layout betrays the Arthur origins of the program.

To check it out, I decided to create the "Schild Dictionary of Quotations". The create option worked smoothly but I was a little taken aback to discover how many irreversible decisions I had to make about the number and size of fields I needed. At this point how could I know? But the default values offered seemed very sensible, extending to the maximum capacity of an E-format floppy. Hard disc files can obviously be longer. My empty file created, I started to explore.

I discovered that it is very easy to enter text – up to 200 lines of it – into the screen window, assisted by a range of familiar word processing key strokes. A convenient prompt line in the centre of the screen invited me to enter appropriate linker file data. I was delighted to discover how simply one could load an entire word processed document, mark areas for transfer to KO and then pop the marked sections into text file windows, discarding unwanted bits. KO is even considerate enough to attempt to strip off embedded commands from transferred files. Full marks for that, but be warned – the transfer option won't work on ancient Wordwise files created on your old BBC computer unless you assign a file type to them using `*settype <filename>` text. You can also import direct from a Z88 or transfer files from the original ArcTFS. If you get stuck, simple help messages can be brought up by clicking "adjust" over the menu items.

You can locate your favourite quotation by using either the context or source codes you previously entered or by typing in a word or two from the text itself. Naturally this takes longer, as the program might have to scan through a whole disc full of data. A small degree of "fuzzy search" is possible. Having found the desired bit of text, another convenient routine is provided to allow you to export it to a disc file either as straight ASCII or ready formatted for Pipedream, First Word Plus or Graphic Writer (what's that?).

In respect of these basic operations, KO worked OK and I can recommend it but there are some grumbles. If you use KO from your hard disc, it keeps dropping a couple of data files into your root directory (presumably so it knows where to find them). You can drag them into the KO directory where it can still find them but it soon over-rides you and puts them back. I like to keep my root directory tidy, hence the winge. Secondly, KO has not been set up to work with the RAM disc. This would greatly benefit floppy users in speeding up text searches. Yes, I know you might forget to copy the RAM file back to floppy when you finished a session, but even that could be error-trapped. I could wish also that the escape key had been

enabled, to get you out of situations you never intended to get into. In general, there are escape paths from idiot situations but they are not always very obvious. I'm also disappointed that KO is not genuinely multi-tasking and that you have to export via a disc file. Wouldn't it be wonderful to be able to drag a bit of text straight out of a KO window into an Impression window? Is anybody listening in Northwich?

Finally a couple of interesting "features". When working with my dictionary of quotations, I was surprised to find Julian of Norwich (c.1375, Patron Saint of Archive? "All manner of things shall be well...") identified as one of the causes of the French Revolution! By some bit of internal but unintentional magic the file title frame at the top of the screen had defaulted to that of the sample document. (How?) Secondly, each piece of text is given an item number, which is incremented every time an entry is made. When you edit a file, this number is incremented by one and assigned to the edited item even though the original item is now lost. Over a period of time a user could become seriously misled about how many items were held in a file.

Is KO worth £60? If it were fully multi-tasking, I wouldn't have a moment's hesitation. As it is, the answer must depend upon how long you have been waiting for just such a tool. **A**

Small Ads

- **A310 + RISC-OS**, extra software £495. Phone 0271-850355.
- **A310 colour + NL10 printer**, software, manuals, 50+ blank discs, £800 o.n.o. Phone Richard on 0495-773984.
- **A310 colour + Panasonic 24 pin printer + Acorn 40M hard disc + software**, £900 o.n.o. Phone 0642-232235 after 7 p.m.
- **A310 colour + RISC-OS**, 2 years Archive + R.U., ArcTFS, Logistix, WWPlus, £725. Phone 0442-875185 evenings.
- **Arthur PRM £12**, Render Bender £29. Phone Roger on 061-799-9845.
- **Dabs Instigator (unused)** £36. Phone Alan on 0344-55772.
- **Electronic Symbols** - A set of Drawfiles to make

circuit diagrams easy. Includes analogue components, CMOS pinouts, etc. £10. C. Harrison, 64 Ditton Lane, Eastleigh SO5 4AB.

- **Miniscribe 8425 hard drive** as supplied by Watford Electronics for 410/1, £150 o.n.o. Phone Damon on 0228-37387.
- **Pipedream3**, as new, unregistered. £85 o.n.o. Phone 081-969-7294, evenings or weekends. Or swap for RISC-OS P.R.M.
- **Second hand Archimedes software**, e.g. Holed Out, Corruption, Graphic Writer, Pacmania, etc. Phone J. Park 0672-810545 5 p.m. onwards.
- **Software** - Cobra £2, Hoverbod £8, Missile Control £8, Desktop games (Arthur only) £2. Send cheques (post paid) to Adam Talbot, 1 Hawthorne Close, Bickley, Kent BR1 2HJ.
- **Twin £15**, Clares Toolkit Plus £21, Linguinity Control Panel £5, Beard Technology PPS256 Graphics Package £10. All originals with manuals, etc. Phone Paul on 0293-515201. **A**

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First Impressions of the R140

Glyn Emery

For most people who have had experience of Unix, no other operating system is quite good enough, not even RISC-OS which borrows a lot from Unix. So when Acorn offered R140's at a bargain price, it was an offer I couldn't refuse. After all, when you subtract the cost of a Unix licence (full cost – no bargains from ITT) you are in effect getting an A440 cheaper than anyone else with a PC Emulator thrown in free.

Why use Unix?

One of the things that attracts me most about Unix is that it provides a set of excellent text processing utilities, which can be incorporated into "shell" scripts (command files, in other words) to construct with relatively little effort powerful processors for text files. Unix also gives you a screen editor (vi) and formatters (nroff and troff) that will handle both tabular and mathematical material. Now there is a PostScript formatter as well. Unix includes compilers for C (naturally) and Fortran77. There is also a compiler-compiler, YACC, for people who want to construct their own special-purpose language. In Acorn's version of Unix (called RISCix) the compilers and one or two other goodies are provided on floppies as packages which you can incorporate into the system or not, according to your needs and the amount of hard disc space available. Two floppy packages contain the X11 windowing system and a desktop which frankly I find inferior to the one provided with RISC-OS. Acorn have also promised a Pascal compiler by the end of the year.

Help!

Other fringe benefits bundled into the offer are a most courteous help-line and a year's free maintenance – both from Granada Microcare. I had occasion to use the first when I inadvertently deleted the Unix !boot file in mistake for a !boot file in another window. Easy to do, particularly for one who like myself has previously approached Unix as an ordinary "peasant" user and now finds himself having to learn the trade of a superuser. I had to make use of the second when, on return from holiday, I switched on and found that the hard disc

would not operate. You also get regular issues of RISCix News.

RISCix and RISC-OS

RISCix sits on top of RISC-OS. Booting puts an "ix" icon on the desktop. Unfortunately, the connection between the two is not transparent. You cannot, for instance, set an alarm going under RISC-OS and expect it to give you a call later when you are working in Unix. If you wish, you can configure so as to boot straight through to Unix without seeing RISC-OS. However, I still need RISC-OS, as I have a fair amount of Archimedes software that I have become used to.

What preoccupies me at present is deciding what work to do under Unix and what under RISC-OS. I have no use at present for the PC emulator though I have a neighbour with an Amstrad who may one day come to me for backup assistance. I shall most certainly go on using First Word Plus and Hearsay under RISC-OS. However, the end of a financial year seems a good time to move my personal finances to Unix. The trouble is that I depend on Hearsay for access to my bank and for current share prices, so there is an integration problem. Acorn have tried to make it easier by providing some specialised utilities to allow you to transfer files from ADFS discs (and incidentally MS-DOS discs) into a Unix directory. The ideal solution would of course be to convert existing Archimedes software into Unix utilities; but that sounds far too big a job to be worth while – even if it infringes no copyrights. I might try doing it with some shareware items though.

Benchmarks

Naturally I tried a bit of bench-marking. I have a sieve program that tests one or two special features of C (Emery, BCPL & C, Blackwell Scientific) which took 216 seconds (timed with the Unix "time" utility) to send all primes up to 49999 to the screen. Unfortunately I have not got the ANSI C to compare it with. I also ran my own (fully recursive) version of that old favourite Ackermann's function (ibid). It took 263 seconds to compute A(3, 10). Unfortunately A(4, 1) produced a core dump – presumably because it ran out of stack.

Virtual terminals

RISCiX provides four virtual terminals: a console, which can be used for system administration; two ordinary ttys and a fourth terminal that seems to be available only under the windowing system. One advantage of switching between several virtual terminals on a single monitor is that you can have more than one foreground job going on at a time without the need for windowing. I logged in on tty0 and set the sieve going. Then I switched to tty1, logged in

as "guest" and ran Ackermann(3, 10) outputting intermediate values to the terminal. Oddly the Ackermann bench-mark used slightly more processor time under these conditions and the sieve slightly less. This showed, if nothing else, that the Acorn "time" utility is as unreliable as it is on every other version of Unix I have met.

Is there anyone else out there using R140's? Have you any comments? observations? hints & tips? If so, drop a line to the editor. **A**

Z88 Dabhand Guide

Steve Hayes

The "Z88 A Dabhand Guide" is a book from Trinity Concepts, the partnership who designed the Z88 Operating Software and is available from Dabs Press for £14.95. It consists of approximately 300 pages of material set out in a very presentable fashion due to its uncluttered layout. Wherever possible the author has tried to avoid duplicating information which can be easily extracted from the User Guide supplied with the Z88.

The Dabhand Guide has a well written introduction with early chapters explaining the Z88 to the inexperienced owner using a "hands on" approach, at the same time setting out the conventions used in the book. Sometimes the obvious can be over-looked but I think the author has gone to a lot of trouble to ensure that time spent reading the book can be repaid by the knowledge gained.

Each chapter covers a certain topic/application using an approach which gently eases the reader through the information contained within. At the end of each chapter is a summary which you can use as a quick reference to remind you of the material covered in the section. The Dabhand Guide also caters for the slightly more technical user with chapters on memory, card slots and plug in applications.

There is also an appendix which is more detailed and concise, directed at the advanced Z88 user, listing pinouts, printer codes, interface information, etc. A slight error occurs here as the guide has been printed with one or two comments which should have been deleted, and some technical information missing that should have been included in its place.

The missing items are:- Z88 <—> various computer wiring connection diagrams (including Archimedes), International Version character sets, and a section on known problems (bugs?) with the Z88. I contacted Dabs Press about this and was informed that they will be sending out amendment sheets, which will correct this, to all owners of the guide. Included with this will be a complete index to the book. Anyone already in possession of the Guide who did not buy the guide direct from Dabs Press should contact them at the end of February by which time the additions should be ready.

Apart from the printing errors, the only thing missing in the book that I personally would have liked to have seen included was a full section on the Command Line Interpreter (CLI) with examples which go beyond the editing of BASIC programs in Pipedream. BASIC itself is not covered in great detail, although the book does give an introduction to the language with examples. Instead the author realistically advises the reader to buy specialist books on the subject and gives some useful recommendations.

Conclusion

As most Z88 users, I suspect, want to use the machine as a convenient time saver, any book written for it should enable the reader to glean maximum information in minimum time. This book does this – and much more besides. Pipedream and the other applications apart from BASIC are well covered and well explained. To quote from the book, "This book is designed to concentrate on those areas which people have found most useful, but tricky to grasp". I agree! With the Z88 user

guide and the Dabhand guide on the table beside the Z88, there should be very little, if any, extra information the average user will want to learn to get the most out of this machine. This is a very good book for the new or inexperienced owner of the portable

Z88 and could be useful for the more experienced owner. Archimedes owners who are fortunate to have a Z88 as well should be able to quickly get the best out of the machine by reading this book. **A**

The Olympics

James Chong

The Olympics is a game of the "Track and Field" genre, as you could probably guess from its title. It comes on two discs with an instruction manual in a nice, big, sturdy box which has the usual blurb and some glorious technicolour screenshots.

On booting up the first disc, one is presented with a well-drawn title page à la E-Type and some background music which I think has aspirations to the "Chariots of Fire" theme. To be honest, they could have done rather better here. Peter Gillett is "credited" with "additional music" and considering that the game itself doesn't actually load until one presses a button or key, he must have had the best part of a megabyte to load a few groovy-sounding samples into. The only plus on this side is that the music fades in and out in a most becoming fashion.

When the program itself is loaded an options screen is presented, enabling one to practise or compete in individual events, or the whole lot. There's also an option to disable the awards ceremony – more about that later...

Make your choice

On choosing to compete, more screens appear – firstly, one where the competitors names are entered, which can only be done by choosing letters with the mouse. Given that the names must be entered every time one wishes to try a different event, it seems rather an oversight that the keyboard cannot be used as an alternative. One must then choose a country to represent. These are on a separate screen and have pictures of their flags next to the names. On selection, another tin-pot tune is played – this time of the particular country's national anthem, so that you know who to cheer for! I was amazed at the number of countries that have National Anthems that sound like Christmas carols!

The Games begin

Finally, the events begin! There is a choice of Diving, Shooting, Javelin, Swimming, Canoeing and Polevault – with the latter three events being on the second disc. It soon becomes apparent that some events are much more "do-able" than others but, thankfully, – as the events are mouse-driven for the most part – there is no frantic pounding of the keyboard.

The first three events (Diving, Shooting and Javelin) were quite easy to attempt and my friends and I all managed to pick up a reasonable number of points, as we did – to a lesser extent – in the Pole Vault. Canoeing is a somewhat more abstract concept, with gates and currents and a sprite which looks something like a fat toothpick which has drawn blood. There are three levels, from Amateur upwards, although amateur seemed to be above our capacity! I just hope that I have a lifejacket to hand should I ever try the real thing! The gates have to be negotiated in a certain order and passed in a certain direction. This event is actually keyboard controlled and you need to have fingers on at least 6 keys, with a friend poised over the Pause button so that you can establish where the next gate is and which direction it should be passed in! This coupled with the fact that Olympic canoes seem to have the manoeuvrability of a cow in syrup make record times rather difficult to come by. No doubt things improve with practice.

That just leaves us with Swimming. This has many variations on a theme – a wide variety of styles and distances. It is most advisable to start with the shortest. The computer provides 3 pacers in adjacent lanes, which make one feel most inadequate – it would have been nice if the programmers could have made it so that you could compete against another human being as – judging by our time trials – we are all equally inept. Swimming, I am assured

by the one of my friends who persevered with it, is not insuperable and he was soon up there with the computer.

Other features

There are a few other touches to the game. On producing a World Record, an airship with engine failure scrolls somewhat jerkily across the screen, dragging a big banner, and these can be saved on the first disc. The crowd cheer with complete impartiality when respectable results are obtained by any of the competitors. Needless to say, they didn't

cheer US very often! Another nice touch is the pair of Ceremony sequences – one at the beginning, where the Olympic flame is lit and one at the end where the winner's National Anthem is played, the sky darkens and fireworks are set off.

On the whole, the Olympics is quite a pleasant game, although at no point is it really spectacular. Given the potential of the Archimedes, the Sprites could be larger and the music more imaginative. If I had the time and the patience, I could probably be persuaded to persevere – but I've seen better. **A**

More about LC10 Colour Dumps

Malcolm Banthorpe

In Archive issue 3.3 page 28, I wrote about Musbury Consultants' screen dump for the LC10 colour printer. While allowing for a wide range of colours to be printed using the four-colour ribbon of the LC10 printer, I found that the results were generally rather pale and suggested that this could possibly be remedied if the program were able to employ a double strike technique. This has now been implemented and, having had a chance to try out the new version, I can report that the program is now capable of much better printouts. This is particularly noticeable when the colour ribbon has already had some wear.

The program now allows not only for a double pass of the printer head for each line but the user can define any number of passes, up to a maximum of seven. This makes it possible to achieve an optimum printout, taking into account both the picture content and the age of the ribbon. The number of passes can be defined both when accessing the program from the desktop icon and when invoking it via the command line. All three sizes of dump are now also available directly from the desktop.

I have also been able to try out the RISC-OS printer driver for the LC10 colour printer written by Ace Computing. This can be used in any situation where !PrinterDM would normally be used, for example with !DRAW and !DTP files, and it is able to interpret the colour information contained within them. It is not possible, as far as I am aware, to have col-

oured text within Acorn DTP but coloured !DRAW files and sprites imported into it are correctly interpreted. Whereas Musbury Consultants' dump uses an error diffusion technique to display a wide range of colours, the Ace Computing printer driver (like the other RISC-OS printer drivers) generates variable size dots in each of the four ribbon colours to display a narrower range of colours of very good density.

Both programs can be recommended as a means of exploiting the potential of the LC10 colour printer when used in conjunction with the Archimedes. So which is the best one to buy? The main point to bear in mind is that the Musbury Consultants colour dump is not a printer driver but may be used to print screens and sprites in a wide range of colours.

The Ace Computing program, while reproducing a narrower range of colours, is a true printer driver and can therefore be also be used, for instance, to print out a !Draw file directly without first converting it into a sprite. The definition is therefore not limited to the screen resolution in which the image is displayed but only to that of the printer – which may be up to 240 x 216 dots per inch.

In general, Musbury Consultants' dump is probably best for reproducing pictures generated from "painting" programs like Artisan and Atelier, whereas the Ace Computing printer driver will be best for diagrams produced by a "drawing" program such as !Draw. **A**

Holed Out Designer

John Sharkey

I've been playing Holed Out for some time now and was beginning to get fed up with playing the same two courses, so I was pleased to receive Holed Out Designer. On loading the program, you are asked whether you require instructions. As there is no manual, I needed instructions. The first part deals with playing the game of golf i.e. club selection, direction, power, etc. The second part is the operation of the Editor.

The Editor consists of a plan of the hole and an Options window. The Options are split into two groups: one for drawing the various objects that make up the hole (Fairway, Green, Bunkers, etc) – these are colour coded; the other group (all coloured red) for controlling the actions of the Editor (Load, Save, etc) and all have their own Help text. All course files are saved in the \$directory on drive 0 – it is not possible to save files to the Editor disc. There are no special actions to read or write to another disc – simply insert the disc before selecting Load or Save.

Designing a hole

There is a template hole with length, par, fairway, bunker, etc already set. I found it just as easy to go the "New Hole" Option and start from scratch. The first thing to be done is to enter the hole length (50-504 yards), then enter the par (2-5) though this can be changed later.

The hole is divided into 50 yard squares. I found graph paper very useful not only for drawing the

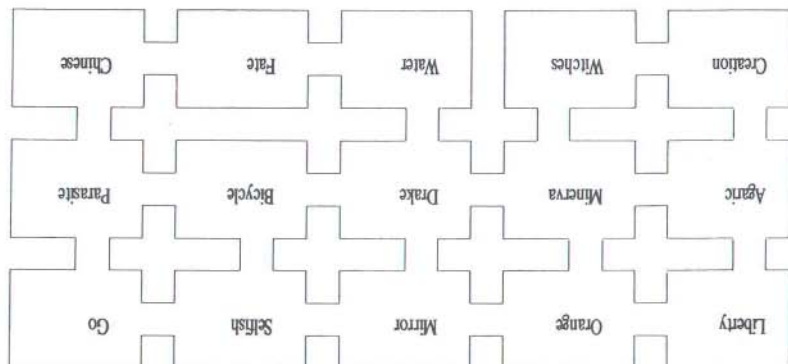
hole but for playing the hole later. The different objects i.e. Bunkers, Water, Paths and Fairway are all selected in the same way: move the arrow over the name of the object and press <select>. The arrow then appears on the plan of the hole: position it at the centre, press <select> and move round the central position pressing <select>. The object is drawn in segments from the centre. When finished, press <adjust>. Trees are added by selecting "Insert Trees" and moving the arrow around pressing <select> when a tree is needed – up to a maximum of 96 per hole.

With the hole designed now select "Write Hole". This stores the data in course memory. This allows you to view the hole and check that bunkers, paths or water are in the right place. If not, they can be moved around by returning to the Editor. If you are satisfied with the result you then "Save Course" – you don't have to design a full course of 18 holes before saving.

I found the Designer very easy to use, even without a manual, because the instructions are very clear. I said at the start of the review that I needed instructions but having used the Editor, I don't think I did need to look at the instructions as the Editor is very user-friendly.

The only criticism I have is not of the designer but of the Holed Out game and that is that the line of sight of the golfer would have been better looking down the fairway rather than at the green. **A**

Caverns Simple Map & Passwords by Neil Berry



Fact-File

(The numbers in *italic>* are fax numbers.)

- 4th Dimension
4mation
628 Software (p27)
Abacus Training
Acorn Computers Ltd
Ace Computing
Aleph One Ltd (p22)
Apricote Studios (p12)
Atomwide Ltd
Beebug
Clares Micro Supplies

Colton Software (p18)
Computer Concepts (p30/31)
Computerware
Domark
Dudley Education Computer Centre

Electronic Font Foundry
EMR Ltd
G.A.Herdman Educational
Ground Control
Ian Copestake Software (p50)
Irlam Instruments
Jim Markland (p3)
Lingenuity (Lindis)
Microvitec plc
Minerva Systems
Morley Electronics

Musbury Consultants
Oak Computers

Pineapple Software
Science Frontiers (p55)
Soft Rock Software
Software Solutions

Techsoft UK Ltd (p16)
The Advisory Unit
The Data Store
Topologika
XOB

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24 Mulgrave Road, Whitby, N Yorkshire, YO21 3JS.
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8 Fairhill, Helmshore, Rossendale, Lancs, BB4 4JX. (0706-216701)
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